```
BBBBBBBBBBBB        AAAAAAAAA        SSSSSSSSSSS  RRRRRRRRRRR     TTTTTTTTTTTTTTT  LLL
BBBBBBBBBBBB        AAAAAAAAA        SSSSSSSSSSS  RRRRRRRRRRR     TTTTTTTTTTTTTTT  LLL
BBBBBBBBBBBB        AAAAAAAAA        SSSSSSSSSSS  RRRRRRRRRRR     TTTTTTTTTTTTTTT  LLL
BBB          BBB   AAA       AAA   SSS           RRR         RRR       TTT        LLL
BBB          BBB   AAA       AAA   SSS           RRR         RRR       TTT        LLL
BBB          BBB   AAA       AAA   SSS           RRR         RRR       TTT        LLL
BBB          BBB   AAA       AAA   SSS           RRR         RRR       TTT        LLL
BBB          BBB   AAA       AAA   SSS           RRR         RRR       TTT        LLL
BBB          BBB   AAA       AAA   SSS           RRR         RRR       TTT        LLL
BBBBBBBBBBBB       AAA       AAA     SSSSSSSSS   RRRRRRRRRRR           TTT        LLL
BBBBBBBBBBBB       AAA       AAA     SSSSSSSSS   RRRRRRRRRRR           TTT        LLL
BBBBBBBBBBBB       AAA       AAA     SSSSSSSSS   RRRRRRRRRRR           TTT        LLL
BBB          BBB   AAAAAAAAAAAAAAA           SSS  RRR   RRR             TTT        LLL
BBB          BBB   AAAAAAAAAAAAAAA           SSS  RRR   RRR             TTT        LLL
BBB          BBB   AAAAAAAAAAAAAAA           SSS  RRR   RRR             TTT        LLL
BBB          BBB   AAA       AAA           SSS  RRR      RRR           TTT        LLL
BBB          BBB   AAAAAAAAAAAAAAA           SSS  RRR   RRR             TTT        LLL
BBB          BBB   AAA       AAA           SSS  RRR      RRR           TTT        LLL
BBB          BBB   AAA       AAA           SSS  RRR      RRR           TTT        LLL
BBB          BBB   AAA       AAA           SSS  RRR      RRR           TTT        LLL
BBBBBBBBBBBB       AAA       AAA   SSSSSSSSSSS   RRR         RRR       TTT        LLLLLLLLLLLLLLL
BBBBBBBBBBBB       AAA       AAA   SSSSSSSSSSS   RRR         RRR       TTT        LLLLLLLLLLLLLLL
BBBBBBBBBBBB       AAA       AAA   SSSSSSSSSSS   RRR         RRR       TTT        LLLLLLLLLLLLLLL
```

```
BBBBBBBB      AAAAAA      SSSSSSSS  MM      MM   SSSSSSSS    GGGGGGGG    GGGGGGGG  EEEEEEEEEE  NN      NN
BBBBBBBB      AAAAAA      SSSSSSSS  MM      MM   SSSSSSSS    GGGGGGGG    GGGGGGGG  EEEEEEEEEE  NN      NN
BB      BB   AA      AA  SS        MMMM  MMMM  SS          GG          GG          EE          NN      NN
BB      BB   AA      AA  SS        MMMM  MMMM  SS          GG          GG          EE          NN      NN
BB      BB   AA      AA  SS        MM  MM  MM  SS          GG          GG          EE          NNNN    NN
BB      BB   AA      AA  SS        MM  MM  MM  SS          GG          GG          EE          NNNN    NN
BBBBBBBB     AA      AA    SSSSSS  MM      MM    SSSSSS    GG          GG          EEEEEEEE    NN  NN  NN
BBBBBBBB     AA      AA    SSSSSS  MM      MM    SSSSSS    GG          GG          EEEEEEEE    NN  NN  NN
BB      BB   AAAAAAAAAA          SS  MM      MM          SS  GG  GGGGGG  GG  GGGGGG  EE          NN    NNNN
BB      BB   AAAAAAAAAA          SS  MM      MM          SS  GG  GGGGGG  GG  GGGGGG  EE          NN    NNNN
BB      BB   AA      AA          SS  MM      MM          SS  GG      GG  GG      GG  EE          NN      NN    ....
BB      BB   AA      AA          SS  MM      MM          SS  GG      GG  GG      GG  EE          NN      NN    ....
BBBBBBBB     AA      AA  SSSSSSSS  MM      MM  SSSSSSSS      GGGGGG      GGGGGG    EEEEEEEEEE  NN      NN    ....
BBBBBBBB     AA      AA  SSSSSSSS  MM      MM  SSSSSSSS      GGGGGG      GGGGGG    EEEEEEEEEE  NN      NN    ....

LL              IIIIII      SSSSSSSS
LL              IIIIII    SSSSSSSS
LL                II      SS
LL                II      SS
LL                II      SS
LL                II      SS
LL                II        SSSSSS
LL                II        SSSSSS
LL                II              SS
LL                II              SS
LL                II              SS
LL                II              SS
LLLLLLLLLL      IIIIII    SSSSSSSS
LLLLLLLLLL      IIIIII    SSSSSSSS
```

```
;     1          0001  0 %TITLE 'BAS$MSG - write BASMSG.MSG'
;     2          0002  0 MODULE BAS$MSG (                        ! Write BASMSG.MSG
;     3          0003  0                 IDENT = '2-003',        ! File: BASMSG.B32
;     4          0004  0                 MAIN = BAS$MSG          ! Edit: MDL2003
;     5          0005  0                 ) =
;     6          0006  1 BEGIN
;     7          0007  1 !
;     8          0008  1 !**************************************************************************
;     9          0009  1 !*                                                                        *
;    10          0010  1 !*  COPYRIGHT (c) 1978, 1980, 1982, 1984 BY                               *
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;    22          0022  1 !*  AND  SHOULD  NOT  BE  CONSTRUED AS  A COMMITMENT BY DIGITAL EQUIPMENT   *
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;    24          0024  1 !*                                                                        *
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;    26          0026  1 !*  SOFTWARE ON EQUIPMENT WHICH IS NOT SUPPLIED BY DIGITAL.                *
;    27          0027  1 !*                                                                        *
;    28          0028  1 !*                                                                        *
;    29          0029  1 !**************************************************************************
;    30          0030  1 !
;    31          0031  1
;    32          0032  1 !++
;    33          0033  1 ! FACILITY:     BASIC
;    34          0034  1 !
;    35          0035  1 ! ABSTRACT:
;    36          0036  1 !
;    37          0037  1 !       This module, BASMSG.B32 is a Bliss32 program that writes
;    38          0038  1 !       the file BASMSG.MSG, which is read by the message compiler
;    39          0039  1 !       to produce BASIC's run-time messages.
;    40          0040  1 !
;    41          0041  1 ! ENVIRONMENT:  Runs at any access mode - AST reentrant
;    42          0042  1 !
;    43          0043  1 ! AUTHOR: John Sauter, CREATION DATE: 03-Nov-78
;    44          0044  1 !
;    45          0045  1 ! MODIFIED BY:
;    46          0046  1 !
;    47          0047  1 ! 1-001 - Write BASMSG.MDL on LIB$:  JBS 27-NOV-78
;    48          0048  1 ! 1-002 - Change PC printed by ON_CHAFIL to be hex.  JBS 19-DEC-78
;    49          0049  1 ! 1-003 - Add I/O List message.  JBS 08-FEB-1979
;    50          0050  1 ! 1-004 - Correct a typo in the I/O List message.  JBS 09-FEB-1979
;    51          0051  1 ! 1-005 - Write output on SRC$:.  JBS 21-MAR-1979
;    52          0052  1 ! 1-006 - Correct spelling of I/O List message.  JBS 20-APR-1979
;    53          0053  1 ! 1-007 - Change the prefixes of the traceback messages to make
;    54          0054  1 !         them less confusing.  JBS 20-APR-1979
;    55          0055  1 ! 1-008 - Change the text of the traceback messages to refer to a SUB
;    56          0056  1 !         as a SUBPROGRAM, not a SUBROUTINE.  JBS 07-MAY-1979
;    57          0057  1 ! 1-009 - Add a message for showing the user PC and PSL at the time
```

```
;    58          0058  1 !                of the error.  JBS 11-MAY-1979
;    59          0059  1 ! 1-010 - Correct a typo in edit 009.  JBS 13-MAY-1979
;    60          0060  1 ! 1-011 - Add an I/O error message which does not have a channel number,
;    61          0061  1 !                for the non-channel I/O statements.  JBS 09-AUG-1979
;    62          0062  1 ! 1-012 - Change I/O List to Immediate Mode.  JBS 17-SEP-1979
;    63          0063  1 ! 1-013 - Write output on LIB$.  JBS 17-SEP-1979
;    64          0064  1 ! 1-014 - Write output on SRC$, to conform to SBL's new procedure.
;    65          0065  1 !                JBS 20-SEP-1979
;    66          0066  1 ! 1-015 - Allow up to 60-character message text.  JBS 24-SEP-1979
;    67          0067  1 ! 1-016 - convert program to generate .MSG file rather than .MDL
;    68          0068  1 !                file.  MDL 23-Jun-1982
;    69          0069  1 ! 2-001 - convert program to Bliss32; adapted from EDTMSG.  MDL 25-Jun-1982
;    70          0070  1 ! 2-002 - change to write BASMSG.TMP, which is compared with BASMSG.MSG
;    71          0071  1 !                for a consistency check.  BLS 6-May-1983
;    72          0072  1 ! 2-003 - facility name is BAS, not BASIC.  MDL 30-Jun-1983
;    73          0073  1 !
;    74          0074  1 !
;    75          0075  1 !--
;    76          0076  1
```

```
;    78          0077  1 %SBTTL 'Declarations'
;    79          0078  1 !
;    80          0079  1 ! SWITCHES:
;    81          0080  1 !
;    82          0081  1
;    83          0082  1 SWITCHES ADDRESSING_MODE (EXTERNAL = GENERAL, NONEXTERNAL = WORD_RELATIVE);
;    84          0083  1
;    85          0084  1 !
;    86          0085  1 ! LINKAGES:
;    87          0086  1 !
;    88          0087  1 !       NONE
;    89          0088  1 !
;    90          0089  1 ! TABLE OF CONTENTS:
;    91          0090  1 !
;    92          0091  1
;    93          0092  1 FORWARD ROUTINE
;    94          0093  1     BAS$MSG,                                    ! Write BASMSG.TMP
;    95          0094  1     WRITE_FILE,                                 ! Actually write the text
;    96          0095  1     PRINT,                                      ! Print a line of text
;    97          0096  1     HEX_TEXT,                                   ! Convert binary to hexadecimal
;    98          0097  1     PRINTABLE_TEXT;                             ! Convert binary to ASCII, printable
;    99          0098  1
;   100          0099  1 !
;   101          0100  1 ! INCLUDE FILES:
;   102          0101  1 !
;   103          0102  1 LIBRARY 'SYS$LIBRARY:STARLET';
;   104          0103  1
;   105          0104  1 LITERAL
;   106          0105  1         BAS$K_FAC_NO = 26;
;   107          0106  1
;   108          0107  1 !
;   109          0108  1 ! MACROS:
;   110          0109  1 !
;   111          0110  1 !       NONE
;   112          0111  1 !
;   113          0112  1 ! EQUATED SYMBOLS:
;   114          0113  1 !
;   115          0114  1
;   116          0115  1
;   117          0116  1 !
;   118          0117  1 ! FIELDS:
;   119          0118  1 !
;   120          0119  1 !       NONE
;   121          0120  1 !
;   122          0121  1 ! STRUCTURES:
;   123          0122  1 !
;   124          0123  1 !       NONE
;   125          0124  1 !
;   126          0125  1 ! PSECTS:
;   127          0126  1 !
;   128          0127  1 !
;   129          0128  1 ! OWN STORAGE:
;   130          0129  1 !
;   131          0130  1 !       NONE
;   132          0131  1 !
;   133          0132  1 ! EXTERNAL REFERENCES:
;   134          0133  1 !
```

```
;  135          0134  1
;  136          0135  1 EXTERNAL ROUTINE
;  137          0136  1     STR$COPY_DX,            ! Copy a string, by descriptor
;  138          0137  1     STR$CONCAT,             ! Concatenate strings
;  139          0138  1     LIB$GET_INPUT,          ! Get a line from SYS$INPUT
;  140          0139  1     STR$COPY_R,             ! Copy a string, by reference
;  141          0140  1     STR$FREE1_DX,           ! Free a dynamic string
;  142          0141  1     ERRTXT;                 ! Return the text of a message
;  143          0142  1
```

```
;  145          0143  1 %SBTTL 'Package of macros for string processing'
;  146          0144  1 !+
;  147          0145  1 ! Macro to initialize a dynamic descriptor.
;  148          0146  1 !-
;  149          0147  1
;  150          0148  1 MACRO
;  151        M 0149  1     INIT_DESCRIPTOR (DESCR) =
;  152        M 0150  1         DESCR [DSC$W_LENGTH] = 0;
;  153        M 0151  1         DESCR [DSC$B_DTYPE] = DSC$K_DTYPE_T;
;  154        M 0152  1         DESCR [DSC$B_CLASS] = DSC$K_CLASS_D;
;  155        M 0153  1         DESCR [DSC$A_POINTER] = 0;
;  156          0154  1 %,
;  157          0155  1 !<BLF/MACRO>
;  158          0156  1 !+
;  159          0157  1 ! Macro to discard a dynamic descriptor.
;  160          0158  1 !-
;  161        M 0159  1     DISCARD_DESCRIPTOR (DESCR) =
;  162        M 0160  1         BEGIN
;  163        M 0161  1
;  164        M 0162  1         LOCAL
;  165        M 0163  1             FREE_STATUS;
;  166        M 0164  1
;  167        M 0165  1         FREE_STATUS = STR$FREE1_DX (DESCR);
;  168        M 0166  1
;  169        M 0167  1         IF ( NOT .FREE_STATUS) THEN SIGNAL_STOP (.FREE_STATUS);
;  170        M 0168  1
;  171        M 0169  1         END;
;  172          0170  1     %,
;  173          0171  1 !+
;  174          0172  1 ! Macro to build a text line using FAO.  This is a convenience macro.
;  175          0173  1 !-
;  176        M 0174  1     BUILD_TEXT_LINE (DESCR, CTL_STRING, FAO_ARGS) =
;  177        M 0175  1         BEGIN
;  178        M 0176  1
;  179        M 0177  1         LOCAL
;  180        M 0178  1             FAO_STATUS,
;  181        M 0179  1             COPY_STATUS;
;  182        M 0180  1
;  183        M 0181  1         CTL_STR_DSC [DSC$W_LENGTH] = %CHARCOUNT (CTL_STRING);
;  184        M 0182  1         CTL_STR_DSC [DSC$B_DTYPE] = DSC$K_DTYPE_T;
;  185        M 0183  1         CTL_STR_DSC [DSC$B_CLASS] = DSC$K_CLASS_S;
;  186        M 0184  1         CTL_STR_DSC [DSC$A_POINTER] = CH$PTR (UPLIT (CTL_STRING));
;  187        M 0185  1         FAO_STATUS = $FAO (                                 !
;  188        M 0186  1             CTL_STR_DSC,                                    !
;  189        M 0187  1             OUT_LENGTH,                                     !
;  190        M 0188  1             TEMP_STR_DSC,                                   !
;  191        M 0189  1             %REMOVE (FAO_ARGS));
;  192        M 0190  1
;  193        M 0191  1         IF ( NOT .FAO_STATUS) THEN SIGNAL_STOP (.FAO_STATUS);
;  194        M 0192  1
;  195        M 0193  1         COPY_STATUS = STR$COPY_R (DESCR, OUT_LENGTH, .TEMP_STR_DSC [DSC$A_POINTER]);
;  196        M 0194  1         .COPY_STATUS
;  197        M 0195  1         END
;  198          0196  1     %,
;  199          0197  1 !+
;  200          0198  1 ! Macro to format and print a line.  Errors are returned to the caller.
;  201          0199  1 ! This is a convenience macro.
```

```
;  202          0200  1 !-
;  203        M 0201  1     PRINT_LINE (TEXT, VARS) =
;  204        M 0202  1         BEGIN
;  205        M 0203  1
;  206        M 0204  1         LOCAL
;  207        M 0205  1             BUILD_STATUS,
;  208        M 0206  1             PRINT_STATUS;
;  209        M 0207  1
;  210        M 0208  1         BUILD_STATUS = BUILD_TEXT_LINE (LINE_DESC, %STRING (%REMOVE (TEXT)), VARS);
;  211        M 0209  1
;  212        M 0210  1         IF ( NOT .BUILD_STATUS) THEN RETURN (.BUILD_STATUS);
;  213        M 0211  1
;  214        M 0212  1         PRINT_STATUS = PRINT (.OUTPUT_RAB, LINE_DESC);
;  215        M 0213  1
;  216        M 0214  1         IF ( NOT .PRINT_STATUS) THEN RETURN (.PRINT_STATUS);
;  217        M 0215  1
;  218        M 0216  1         END
;  219          0217  1     %;
;  220          0218  1
```

```
;   222          0219  1 %SBTTL 'BAS$MSG - Write BASMSG.TMP'
;   223          0220  1 ROUTINE BAS$MSG                                    ! Write BASMSG.TMP
;   224          0221  1     =
;   225          0222  1
;   226          0223  1 !++
;   227          0224  1 ! FUNCTIONAL DESCRIPTION:
;   228          0225  1 !
;   229          0226  1 !       This routine writes the file BASMSG.TMP.
;   230          0227  1 !
;   231          0228  1 ! CALLING SEQUENCE:
;   232          0229  1 !
;   233          0230  1 !       ret_status.wlc.v = BAS$MSG ()
;   234          0231  1 !
;   235          0232  1 ! FORMAL PARAMETERS:
;   236          0233  1 !
;   237          0234  1 !       NONE
;   238          0235  1 !
;   239          0236  1 ! IMPLICIT INPUTS:
;   240          0237  1 !
;   241          0238  1 !       NONE
;   242          0239  1 !
;   243          0240  1 ! IMPLICIT OUTPUTS:
;   244          0241  1 !
;   245          0242  1 !       NONE
;   246          0243  1 !
;   247          0244  1 ! COMPLETION STATUS:
;   248          0245  1 !
;   249          0246  1 !       SS$_NORMAL      Normal successful completion
;   250          0247  1 !       Any error from LIB$GET_INPUT or STR$FREE1_DX
;   251          0248  1 !
;   252          0249  1 ! SIDE EFFECTS:
;   253          0250  1 !
;   254          0251  1 !       Writes a file.
;   255          0252  1 !       Any errors from RMS$CREATE, RMS$OPEN, RMS$CONNECT or RMS$CLOSE
;   256          0253  1 !        are signalled.
;   257          0254  1 !
;   258          0255  1 !--
;   259          0256  1
;   260          0257  2     BEGIN
;   261          0258  2
;   262          0259  2     LOCAL
;   263          0260  2         OUTPUT_BUFFER : BLOCK [132, BYTE],      ! output buffer, for RMS
;   264          0261  2         OUTPUT_FAB : $FAB_DECL,                 ! RMS FAB for the output file
;   265          0262  2         OUTPUT_NAM : $NAM_DECL,                 ! RMS NAM for the output file
;   266          0263  2         OUTPUT_RAB : $RAB_DECL,                 ! RMS RAB for the output file
;   267          0264  2         OUTPUT_FILE_NAME : BLOCK [8, BYTE],     ! Name of output file
;   268          0265  2         OUTPUT_RESULT_NAME : BLOCK [NAM$C_MAXRSS, BYTE];        ! Place to store output file name
;   269          0266  2
;   270          0267  2 !
;   271          0268  2     OUTPUT_FILE_NAME [DSC$W_LENGTH] = %CHARCOUNT ('BASMSG');
;   272          0269  2     OUTPUT_FILE_NAME [DSC$B_DTYPE] = DSC$K_DTYPE_T;
;   273          0270  2     OUTPUT_FILE_NAME [DSC$B_CLASS] = DSC$K_CLASS_S;
;   274          0271  2     OUTPUT_FILE_NAME [DSC$A_POINTER] = UPLIT ('BASMSG');
;   275          0272  2 !+
;   276          0273  2 ! Initialize the FAB, NAM and RAB for the output file
;   277          0274  2 !-
;   278        P 0275  2     $FAB_INIT (FAB = OUTPUT_FAB,                !
```

```
;  279        P 0276  2          FAC = (PUT),                                    !
;  280        P 0277  2          FOP = (OFP, SQO, DFW),                          !
;  281        P 0278  2          ORG = SEQ,                                      !
;  282        P 0279  2          SHR = NIL,                                      !
;  283        P 0280  2          MRS = 132,                                      !
;  284        P 0281  2          RAT = CR,                                       !
;  285        P 0282  2          RFM = VAR,                                      !
;  286        P 0283  2          FNA = .OUTPUT_FILE_NAME [DSC$A_POINTER],        !
;  287        P 0284  2          FNS = .OUTPUT_FILE_NAME [DSC$W_LENGTH],         !
;  288        P 0285  2          DNA = UPLIT ('SRC$:.TMP'),                      !
;  289        P 0286  2          DNS = %CHARCOUNT ('SRC$:.TMP'),                 !
;  290          0287  2          NAM = OUTPUT_NAM);
;  291        P 0288  2      $NAM_INIT (NAM = OUTPUT_NAM,                        !
;  292        P 0289  2          RSA = OUTPUT_RESULT_NAME,                       !
;  293          0290  2          RSS = NAM$C_MAXRSS);
;  294        P 0291  2      $RAB_INIT (RAB = OUTPUT_RAB,                        !
;  295        P 0292  2          RAC = SEQ,                                      !
;  296        P 0293  2          ROP = WBH,                                      !
;  297        P 0294  2          USZ = 132,                                      !
;  298        P 0295  2          UBF = OUTPUT_BUFFER,                            !
;  299          0296  2          FAB = OUTPUT_FAB);
;  300          0297  2  !+
;  301          0298  2  ! Create the output file, and do the $CONNECT.
;  302          0299  2  !-
;  303          0300  3      BEGIN
;  304          0301  3
;  305          0302  3      LOCAL
;  306          0303  3          CREATE_STATUS,
;  307          0304  3          CONNECT_STATUS;
;  308          0305  3
;  309          0306  3      CREATE_STATUS = $CREATE (FAB = OUTPUT_FAB);
;  310          0307  3
;  311          0308  4      IF ( NOT .CREATE_STATUS)
;  312          0309  3      THEN
;  313          0310  3          SIGNAL_STOP (                                   !
;  314          0311  3              SHR$_OPENOUT + (BAS$K_FAC_NO*65536) + STS$K_SEVERE,     !
;  315          0312  3              1,                                          !
;  316          0313  3              OUTPUT_FILE_NAME,           !
;  317          0314  3              .OUTPUT_FAB [FAB$L_STS], .OUTPUT_FAB [FAB$L_STV]);
;  318          0315  3
;  319          0316  3      CONNECT_STATUS = $CONNECT (RAB = OUTPUT_RAB);
;  320          0317  3
;  321          0318  4      IF ( NOT .CONNECT_STATUS)
;  322          0319  3      THEN
;  323          0320  3          SIGNAL_STOP (                                   !
;  324          0321  3              SHR$_OPENOUT + (BAS$K_FAC_NO*65536) + STS$K_SEVERE;     !
;  325          0322  3              1,                                          !
;  326          0323  3              OUTPUT_FILE_NAME,           !
;  327          0324  3              .OUTPUT_RAB [RAB$L_STS], .OUTPUT_RAB [RAB$L_STV]);
;  328          0325  3
;  329          0326  2      END;
;  330          0327  2  !+
;  331          0328  2  ! Point the file name descriptor to the resultant name string.
;  332          0329  2  !-
;  333          0330  2      OUTPUT_FILE_NAME [DSC$W_LENGTH] = .OUTPUT_NAM [NAM$B_RSL];
;  334          0331  2      OUTPUT_FILE_NAME [DSC$B_DTYPE] = DSC$K_DTYPE_T;
;  335          0332  2      OUTPUT_FILE_NAME [DSC$B_CLASS] = DSC$K_CLASS_S;
```

```
;  336     0333  2     OUTPUT_FILE_NAME [DSC$A_POINTER] = .OUTPUT_NAM [NAM$L_RSA];
;  337     0334
;  338     0335        IF ( NOT WRITE_FILE (OUTPUT_RAB))
;  339     0336        THEN
;  340     0337            SIGNAL_STOP (                                   !
;  341     0338                SHR$_WRITEERR + (BAS$K_FAC_NO*65536) + STS$K_SEVERE,        !
;  342     0339                1,                                          !
;  343     0340                OUTPUT_FILE_NAME,               !
;  344     0341                .OUTPUT_RAB [RAB$L_STS], .OUTPUT_RAB [RAB$L_STV]);
;  345     0342
;  346     0343        BEGIN
;  347     0344    !+
;  348     0345    ! Close the output file.
;  349     0346    !-
;  350     0347
;  351     0348        LOCAL
;  352     0349            CLOSE_STATUS;
;  353     0350
;  354     0351        CLOSE_STATUS = $CLOSE (FAB = OUTPUT_FAB);
;  355     0352
;  356     0353        IF ( NOT .CLOSE_STATUS)
;  357     0354        THEN
;  358     0355            SIGNAL_STOP (                                   !
;  359     0356                SHR$_CLOSEOUT + (BAS$K_FAC_NO*65536) + STS$K_SEVERE,        !
;  360     0357                1,                                          !
;  361     0358                OUTPUT_FILE_NAME,               !
;  362     0359                .OUTPUT_FAB [FAB$L_STS], .OUTPUT_FAB [FAB$L_STV]);
;  363     0360
;  364     0361        END;
;  365     0362  2     RETURN (SS$_NORMAL);
;  366     0363  1     END;                                            ! End of routine BAS$MSG


                                                    .TITLE  BAS$MSG BAS$MSG - write BASMSG.MSG
                                                    .IDENT  \2-003\

                                                    .PSECT  $PLIT$,NOWRT,NOEXE,2

                                00  00  47  53  4D  53  41  42  00000 P.AAA:   .ASCII  \BASMSG\<0><0>
                00  00  00  50  4D  54  2E  3A  24  43  52  53  00008 P.AAB:   .ASCII  \SRC$:.TMP\<0><0><0>

                                                    .EXTRN  STR$COPY_DX, STR$CONCAT
                                                    .EXTRN  LIB$GET_INPUT, STR$COPY_R
                                                    .EXTRN  STR$FREE1_DX, ERRTXT
                                                    .EXTRN  SYS$CREATE, SYS$CONNECT
                                                    .EXTRN  SYS$CLOSE

                                                    .PSECT  $CODE$,NOWRT,2

                                            007C 00000 BAS$MSG: .WORD   Save R2,R3,R4,R5,R6                 ; 0220
                                    56 00000000G    00   9E 00002       MOVAB   LIB$STOP, R6                        ;
                                    5E      FD80    CE   9E 00009       MOVAB   -640(SP), SP                        ;
                            0100    CE  010E0006    8F   D0 0000E       MOVL    #17694726, OUTPUT_FILE_NAME         ; 0268
                            0104    CE      0000'   CF   9E 00017       MOVAB   P.AAA, OUTPUT_FILE_NAME+4           ; 0271
        0050    8F              00              6E       00 2C 0001E    MOVC5   #0, (SP), #0, #80, $RMS_PTR         ; 0287
                                                FF2C CD     00025
                            FF2C    CD      5003    8F   B0 00028       MOVW    #20483, $RMS_PTR                    ;
```

```
                                FF30    CD 20000060     8F  D0 0002F           MOVL    #536871008, $RMS_PTR+4
                                FF42    CD      2001    8F  B0 00038           MOVW    #8193, $RMS_PTR+22
                                FF49    CD      0200    8F  B0 0003F           MOVW    #512, $RMS_PTR+29
                                FF4B    CD              02  90 00046           MOVB    #2, $RMS_PTR+31
                                FF54    CD      FECC    CD  9E 0004B           MOVAB   OUTPUT_NAM, $RMS_PTR+40
                                FF58    CD      0104    CE  D0 00052           MOVL    OUTPUT_FILE_NAME+4, $RMS_PTR+44
                                FF5C    CD      0000'   CF  9E 00059           MOVAB   P.AAB, $RMS_PTR+48
                                FF60    CD      0100    CE  90 00060           MOVB    OUTPUT_FILE_NAME, $RMS_PTR+52
                                FF61    CD              09  90 00067           MOVB    #9, $RMS_PTR+53
                                FF62    CD        84    8F  9B 0006C           MOVZBW  #132, $RMS_PTR+54
    0060    8F          00              6E              00  2C 00072           MOVC5   #0, (SP), #0, #96, $RMS_PTR                     0290
                                        FECC    CD      CD  00079
                                FECC    CD      6002    8F  B0 0007C           MOVW    #24578, $RMS_PTR
                                FECE    CD              01  8E 00083           MNEGB   #1, $RMS_PTR+2
                                FED0    CD              6E  9E 00088           MOVAB   OUTPUT_RESULT_NAME, $RMS_PTR+4
    0044    8F          00              6E              00  2C 0008D           MOVC5   #0, (SP), #0, #68, $RMS_PTR                     0296
                                        0108    CE      CE  00094
                                0108    CE      4401    8F  B0 00097           MOVW    #17409, $RMS_PTR
                                010C    CE      0400    8F  3C 0009E           MOVZWL  #1024, $RMS_PTR+4
                                        0126    CE      94  000A5              CLRB    $RMS_PTR+30
                                0128    CE        84    8F  9B 000A9           MOVZBW  #132, $RMS_PTR+32
                                012C    CE      FF7C    CD  9E 000AF           MOVAB   OUTPUT_BUFFER, $RMS_PTR+36
                                FEC4    CD      FF2C    CD  9E 000B6           MOVAB   OUTPUT_FAB, $RMS_PTR+60
                                        FF2C    CD      9F  000BD              PUSHAB  OUTPUT_FAB                                      0306
                        00000000G       00              01  FB 000C1          CALLS   #1, SYS$CREATE
                                        14              50  E8 000C8          BLBS    CREATE_STATUS, 1$                               0308
                                        7E      FF34    CD  7D 000CB          MOVQ    OUTPUT_FAB+8, -(SP)                             0314
                                                0108    CE  9F 000D0          PUSHAB  OUTPUT_FILE_NAME                                0310
                                                        01  DD 000D4          PUSHL   #1
                                        001A10A4        8F  DD 000D6          PUSHL   #1708196                                        0311
                                    66                  05  FB 000DC          CALLS   #5, LIB$STOP
                                                0108    CE  9F 000DF  1$:      PUSHAB  OUTPUT_RAB                                      0316
                        00000000G       00              01  FB 000E3          CALLS   #1, SYS$CONNECT
                                        17              50  E8 000EA          BLBS    CONNECT_STATUS, 2$                              0318
                                                0114    CE  DD 000ED          PUSHL   OUTPUT_RAB+12                                   0324
                                                0114    CE  DD 000F1          PUSHL   OUTPUT_RAB+8
                                                0108    CE  9F 000F5          PUSHAB  OUTPUT_FILE_NAME                                0320
                                                        01  DD 000F9          PUSHL   #1
                                        001A10A4        8F  DD 000FB          PUSHL   #1708196                                        0321
                                    66                  05  FB 00101          CALLS   #5, LIB$STOP
    0100    CE          FECF    CD  9B 00104  2$:      MOVZBW  OUTPUT_NAM+3, OUTPUT_FILE_NAME                                  0330
    0102    CE          010E    8F  B0 0010B          MOVW    #270, OUTPUT_FILE_NAME+2                                        0331
    0104    CE          FED0    CD  D0 00112          MOVL    OUTPUT_NAM+4, OUTPUT_FILE_NAME+4                                0333
                                0108    CE  9F 00119          PUSHAB  OUTPUT_RAB                                                      0335
    0000V   CF                          01  FB 0011D          CALLS   #1, WRITE_FILE
                                        17              50  E8 00122          BLBS    R0, 3$
                                                0114    CE  DD 00125          PUSHL   OUTPUT_RAB+12                                   0341
                                                0114    CE  DD 00129          PUSHL   OUTPUT_RAB+8
                                                0108    CE  9F 0012D          PUSHAB  OUTPUT_FILE_NAME                                0337
                                                        01  DD 00131          PUSHL   #1
                                        001A10D4        8F  DD 00133          PUSHL   #1708244                                        0338
                                    66                  05  FB 00139          CALLS   #5, LIB$STOP
                                        FF2C    CD      9F  0013C  3$:         PUSHAB  OUTPUT_FAB                                      0351
                        00000000G       00              01  FB 00140          CALLS   #1, SYS$CLOSE
                                        14              50  E8 00147          BLBS    CLOSE_STATUS, 4$                                0353
                                        7E      FF34    CD  7D 0014A          MOVQ    OUTPUT_FAB+8, -(SP)                             0359
                                                0108    CE  9F 0014F          PUSHAB  OUTPUT_FILE_NAME                                0355
```

```
                    01  DD 00153        PUSHL   #1                          ;
           001A105C 8F  DD 00155        PUSHL   #1708124                    ; 0356
      66            05  FB 0015B        CALLS   #5, LIB$STOP                ;
      50            01  D0 0015E 4$:    MOVL    #1, R0                      ; 0362
                        04 00161        RET                                 ; 0363

; Routine Size:  354 bytes,    Routine Base:  $CODE$ + 0000
```

```
;  368          0364  1 %SBTTL 'WRITE_FILE - Actually write the file'
;  369          0365  1 ROUTINE WRITE_FILE (                                  ! Actually write the file
;  370          0366  1         OUTPUT_RAB                                    ! Where to write each record
;  371          0367  1     ) =
;  372          0368  1
;  373          0369  1 !++
;  374          0370  1 ! FUNCTIONAL DESCRIPTION:
;  375          0371  1 !
;  376          0372  1 !       This routine writes each record on the specified RAB.
;  377          0373  1 !
;  378          0374  1 ! CALLING SEQUENCE:
;  379          0375  1 !
;  380          0376  1 !       ret_status.wlc.v = WRITE_FILE (OUTPUT_RAB.mz.r)
;  381          0377  1 !
;  382          0378  1 ! FORMAL PARAMETERS:
;  383          0379  1 !
;  384          0380  1 !       OUTPUT_RAB              RAB onto which to write the text
;  385          0381  1 !
;  386          0382  1 ! IMPLICIT INPUTS:
;  387          0383  1 !
;  388          0384  1 !       NONE
;  389          0385  1 !
;  390          0386  1 ! IMPLICIT OUTPUTS:
;  391          0387  1 !
;  392          0388  1 !       None
;  393          0389  1 !
;  394          0390  1 ! COMPLETION STATUS:
;  395          0391  1 !
;  396          0392  1 !       SS$_NORMAL      Normal successful completion
;  397          0393  1 !       Any errors from RMS $PUT
;  398          0394  1 !
;  399          0395  1 ! SIDE EFFECTS:
;  400          0396  1 !
;  401          0397  1 !       Writes on the file connected to OUTPUT_RAB
;  402          0398  1 !
;  403          0399  1 !--
;  404          0400  1
;  405          0401  2     BEGIN
;  406          0402  2
;  407          0403  2     MAP
;  408          0404  2         OUTPUT_RAB : REF $RAB_DECL;
;  409          0405  2
;  410          0406  2     LOCAL
;  411          0407  2 !+
;  412          0408  2 ! Stuff for BUILD_TEXT_LINE
;  413          0409  2 !-
;  414          0410  2         CTL_STR_DSC : BLOCK [8, BYTE],
;  415          0411  2         TEMP_STR_DSC : BLOCK [8, BYTE],
;  416          0412  2         TEMP_STRING : VECTOR [132, BYTE],
;  417          0413  2         OUT_LENGTH,
;  418          0414  2 !+
;  419          0415  2 ! Stuff for PRINT_LINE
;  420          0416  2 !-
;  421          0417  2         LINE_DESC : BLOCK [8, BYTE],
;  422          0418  2 !+
;  423          0419  2 ! End of stuff for PRINT_LINE
;  424          0420  2 !-
```

```
;  425          0421  2          PRINTABLE_DESC : BLOCK [8, BYTE],
;  426          0422  2          HEX_DESC : BLOCK [8, BYTE],
;  427          0423  2          TEXT : BLOCK [8, BYTE],
;  428          0424  2          NAME : BLOCK [8, BYTE],
;  429          0425  2          SEVERITY : BLOCK [8, BYTE],
;  430          0426  2          NAMLEN,
;  431          0427  2          TXTLEN,
;  432          0428  2          SEVLEN,
;  433          0429  2          SEVERITY_ADDR : REF VECTOR [, BYTE];
;  434          0430  2
;  435          0431  2      !+
;  436          0432  2      ! Set up TEMP_STR_DSC for BUILD_TEXT_LINE
;  437          0433  2      !-
;  438          0434  2          TEMP_STR_DSC [DSC$W_LENGTH] = 132;
;  439          0435  2          TEMP_STR_DSC [DSC$B_DTYPE] = DSC$K_DTYPE_T;
;  440          0436  2          TEMP_STR_DSC [DSC$B_CLASS] = DSC$K_CLASS_S;
;  441          0437  2          TEMP_STR_DSC [DSC$A_POINTER] = CH$PTR (TEMP_STRING);
;  442          0438  2      !+
;  443          0439  2      ! Set up LINE_DESC for PRINT_LINE, etc.
;  444          0440  2      !-
;  445          0441  2          INIT_DESCRIPTOR (LINE_DESC);
;  446          0442  2          INIT_DESCRIPTOR (PRINTABLE_DESC);
;  447          0443  2          INIT_DESCRIPTOR (HEX_DESC);
;  448          0444  2          INIT_DESCRIPTOR (TEXT);
;  449          0445  2          INIT_DESCRIPTOR (NAME);
;  450          0446  2          INIT_DESCRIPTOR (SEVERITY);
;  451          0447  2      !+
;  452          0448  2      ! Put out the initial information.
;  453          0449  2      !-
;  454          0450  2          PRINT_LINE (<'!! This file, BASMSG.TMP, contains the definitions of the BASIC'>, <' '>);
;  455          0451  2          PRINT_LINE (<'!! messages for VAX/VMS.  This file is read by the MESSAGE compiler'>, <' '>);
;  456          0452  2          PRINT_LINE (<'!! to build an object file containing the BASIC messages.'>, <' '>);
;  457          0453  2          PRINT_LINE (<'!!'>, <' '>);
;  458          0454  2          PRINT_LINE (<'        .TITLE BASIC''s message text'>, <' '>);
;  459          0455  2          PRINT_LINE (<'!!'>, <' '>);
;  460          0456  2          PRINT_LINE (<'.FACILITY/SYSTEM BAS, !SL'>, <BAS$K_FAC_NO>);
;  461          0457  2          PRINT_LINE (<'.BASE 0'>, <' '>);
;  462          0458  2      !+
;  463          0459  2      ! Write a line for each of the 256 BASIC messages
;  464          0460  2      !-
;  465          0461  2
;  466          0462  2          INCR CODE FROM 0 TO 255 DO
;  467          0463  3              BEGIN
;  468          0464  3              ERRTXT (CODE, NAMLEN, NAME, TXTLEN, TEXT, SEVLEN, SEVERITY);
;  469          0465  3
;  470          0466  3              PRINT_LINE (<'!AS/!AS <!AS>'>, <NAME, SEVERITY, TEXT>);
;  471          0467  2              END;
;  472          0468  2
;  473          0469  2      !+
;  474          0470  2      ! Write out the 11 trailing error codes beginning at code 4085.
;  475          0471  2      !-
;  476          0472  2          PRINT_LINE (<'.BASE 4085'>, <' '>);
;  477          0473  2          PRINT_LINE (<'FORFILUSE/INFO <for file !!AS at user PC !!XL> /FAO=2'>, <' '>);
;  478          0474  2          PRINT_LINE (<'USEPC_PSL/INFO <at user PC=!!XL, PSL=!!XL> /FAO=2'>, <' '>);
;  479          0475  2          PRINT_LINE (<'FROIOC/INFO <from immediate mode in module !!AC> /FAO=1'>, <' '>);
;  480          0476  2          PRINT_LINE (<'ON_CHAFIL/INFO <on channel !!SL for file !!AS at user PC !!XL> /FAO=3'>, <' '>);
;  481          0477  2          PRINT_LINE (<'FROLINMOD/INFO <from line !!SL in module !!AC> /FAO=2'>, <' '>);
```

```
;  482          0478  2      PRINT_LINE (<'FROLINSUB/INFO <from line !!SL in subprogram !!AC> /FAO=2'>, <' '>);
;  483          0479  2      PRINT_LINE (<'FROLINFUN/INFO <from line !!SL in external function !!AC> /FAO=2'>, <' '>);
;  484          0480  2      PRINT_LINE (<'FROLINDEF/INFO <from line !!SL in DEF !!AC in module !!AC> /FAO=3'>, <' '>);
;  485          0481  2      PRINT_LINE (<'FROLINDFS/INFO <from line !!SL in DEF* !!AC in module !!AC> /FAO=3'>, <' '>);
;  486          0482  2      PRINT_LINE (<'FROLINGSB/INFO <from line !!SL in GOSUB !!SL in module !!AC> /FAO=3'>, <' '>);
;  487          0483  2      PRINT_LINE (<'FROLINOEG/INFO <from line !!SL in ON ERROR GOTO !!SL in module !!AC> /FAO=3'>, <' '>);
;  488          0484  2
;  489          0485  2  !+
;  490          0486  2  ! Write out the trailer line
;  491          0487  2  !-
;  492          0488  2      PRINT_LINE (<'.END'>, <' '>);
;  493          0489  2  !+
;  494          0490  2  ! All done.
;  495          0491  2  !-
;  496          0492  2      DISCARD_DESCRIPTOR (LINE_DESC);
;  497          0493  2      DISCARD_DESCRIPTOR (PRINTABLE_DESC);
;  498          0494  2      DISCARD_DESCRIPTOR (HEX_DESC);
;  499          0495  2      DISCARD_DESCRIPTOR (TEXT);
;  500          0496  2      DISCARD_DESCRIPTOR (NAME);
;  501          0497  2      DISCARD_DESCRIPTOR (SEVERITY);
;  502          0498  2      RETURN (SS$_NORMAL);
;  503          0499  1      END;                                    ! End of routine WRITE_FILE


                                                                    .PSECT  $PLIT$,NOWRT,NOEXE,2

42 20 2C 65 6C 69 66 20 73 69 68 54 20 21 21  00014 P.AAC:  .ASCII  \!! This file, BASMSG.TMP, contains the d\  ;
74 6E 6F 63 20 2C 50 4D 54 2E 47 53 4D 53 41  00023                                                           ;
                  64 20 65 68 74 20 73 6E 69  00032                                                           ;
74 20 66 6F 20 73 6E 6F 69 74 69 6E 69 66 65  0003C          .ASCII  \efinitions of the BASIC\<0>              ;
                  00 43 49 53 41 42 20 65 68  0004B                                                           ;
72 6F 66 20 73 65 67 61 73 73 65 6D 20 21 21  00054 P.AAD:  .ASCII  \!! messages for VAX/VMS.  This file is r\  ;
73 69 68 54 20 20 2E 53 4D 56 2F 58 41 56 20  00063                                                           ;
                  72 20 73 69 20 65 6C 69 66  00072                                                           ;
53 53 45 4D 20 65 68 74 20 79 62 20 64 61 65  0007C          .ASCII  \ead by the MESSAGE compiler\<0>          ;
   00 72 65 6C 69 70 6D 6F 63 20 45 47 41 0008B                                                               ;
20 6E 61 20 64 6C 69 75 62 20 6F 74 20 21 21  00098 P.AAE:  .ASCII  \!! to build an object file containing th\  ;
6E 6F 63 20 65 6C 69 66 20 74 63 65 6A 62 6F  000A7                                                           ;
                  68 74 20 67 6E 69 6E 69 61  000B6                                                           ;
65 67 61 73 73 65 6D 20 43 49 53 41 42 20 65  000C0          .ASCII  \e BASIC messages.\<0><0><0>              ;
                              00 00 00 2E 73  000CF                                                           ;
                                 00 00 21 21  000D4 P.AAF:  .ASCII  \!!\<0><0>                               ;
20 45 4C 54 49 54 2E 20 20 20 20 20 20 20 20  000D8 P.AAG:  .ASCII  \        .TITLE BASIC's message text\<0>    ;
65 67 61 73 73 65 6D 20 73 27 43 49 53 41 42  000E7                                                           ;
                        00 74 78 65 74 20 20  000F6                                                           ;
                                 00 00 21 21  000FC P.AAH:  .ASCII  \!!\<0><0>                               ;
45 54 53 59 53 2F 59 54 49 4C 49 43 41 46 2E  00100 P.AAI:  .ASCII  \.FACILITY/SYSTEM BAS, !SL\<0><0><0>      ;
   00 00 00 4C 53 21 20 2C 53 41 42 20 4D 20  0010F                                                           ;
                     00 30 20 45 53 41 42 2E  0011C P.AAJ:  .ASCII  \.BASE 0\<0>                              ;
00 00 3E 53 41 21 3C 20 53 41 21 2F 53 41 21  00124 P.AAK:  .ASCII  \!AS/!AS <!AS>\<0><0><0>                 ;
                                    00 00 33  00133                                                           ;
      00 00 35 38 30 34 20 45 53 41 42 2E 20  00134 P.AAL:  .ASCII  \.BASE 4085\<0><0>                        ;
20 4F 46 4E 49 2F 45 53 55 4C 49 46 52 4F 46  00140 P.AAM:  .ASCII  \FORFILUSE/INFO <for file !!AS at user PC\  ;
20 53 41 21 21 20 65 6C 69 66 20 72 6F 66 3C  0014F                                                           ;
                  43 50 20 72 65 73 75 20 74  0015E                                                           ;
00 00 32 3D 4F 41 46 2F 20 3E 4C 58 21 21 20  00168          .ASCII  \ !!XL> /FAO=2\<0><0><0>                  ;
```

```
                                                                00 00177
20 4F 46 4E 49 2F 4C 53 50 5F 43 50 45 53                       55 00178 P.AAN:   .ASCII  \USEPC_PSL/INFO <at user PC=!!XL, PSL=!!X\
58 21 21 3D 43 50 20 72 65 73 75 20 74 61                       3C 00187
                  58 21 21 3D 4C 53 50 20 2C                    4C 00196
                  00 00 00 32 3D 4F 41 46 2F 20 3E              4C 001A0          .ASCII  \L> /FAO=2\<0><0><0>
72 66 3C 20 4F 46 4E 49 2F 4C 4F 49 4F 52                       46 001AC P.AAO:   .ASCII  \FROIOL/INFO <from immediate mode in modu\
6F 6D 20 65 74 61 69 64 65 6D 6D 69 20 6D                       6F 001BB
                  75 64 6F 6D 20 6E 69 20 65                    64 001CA
31 3D 4F 41 46 2F 20 3E 43 41 21 21 20 65                       6C 001D4          .ASCII  \le !!AC> /FAO=1\<0>
                                                                00 001E3
20 4F 46 4E 49 2F 4C 49 46 41 48 43 5F 4E                       4F 001E4 P.AAP:   .ASCII  \ON_CHAFIL/INFO <on channel !!SL for file\
53 21 21 20 6C 65 6E 6E 61 68 63 20 6E 6F                       3C 001F3
                  65 6C 69 66 20 72 6F 66 20                    4C 00202
50 20 72 65 73 75 20 74 61 20 53 41 21 21                       20 0020C          .ASCII  \ !!AS at user PC !!XL> /FAO=3\<0><0>
00 33 3D 4F 41 46 2F 20 3E 4C 58 21 21 20                       43 0021B
                                                                00 0022A
                                                                00 0022B          .ASCII  <0>
20 4F 46 4E 49 2F 44 4F 4D 4E 49 4C 4F 52                       46 0022C P.AAQ:   .ASCII  \FROLINMOD/INFO <from line !!SL in module\
4C 53 21 21 20 65 6E 69 6C 20 6D 6F 72 66                       3C 0023B
                  65 6C 75 64 6F 6D 20 6E 69                    20 0024A
00 00 32 3D 4F 41 46 2F 20 3E 43 41 21 21                       20 00254          .ASCII  \ !!AC> /FAO=2\<0><0><0>
                                                                00 00263
20 4F 46 4E 49 2F 42 55 53 4E 49 4C 4F 52                       46 00264 P.AAR:   .ASCII  \FROLINSUB/INFO <from line !!SL in subpro\
4C 53 21 21 20 65 6E 69 6C 20 6D 6F 72 66                       3C 00273
                  6F 72 70 62 75 73 20 6E 69                    20 00282
4F 41 46 2F 20 3E 43 41 21 21 20 6D 61 72                       67 0028C          .ASCII  \gram !!AC> /FAO=2\<0><0><0>
                                  00 00 00 32                   3D 00298
20 4F 46 4E 49 2F 4E 55 46 4E 49 4C 4F 52                       46 002A0 P.AAS:   .ASCII  \FROLINFUN/INFO <from line !!SL in extern\
4C 53 21 21 20 65 6E 69 6C 20 6D 6F 72 66                       3C 002AF
                  6E 72 65 74 78 65 20 6E 69                    20 002BE
41 21 21 20 6E 6F 69 74 63 6E 75 66 20 6C                       61 002C8          .ASCII  \al function !!AC> /FAO=2\
                  32 3D 4F 41 46 2F 20 3E                       43 002D7
20 4F 46 4E 49 2F 46 45 44 4E 49 4C 4F 52                       46 002E0 P.AAT:   .ASCII  \FROLINDEF/INFO <from line !!SL in DEF !!\
4C 53 21 21 20 65 6E 69 6C 20 6D 6F 72 66                       3C 002EF
                  21 21 20 46 45 44 20 6E 69                    20 002FE
21 21 20 65 6C 75 64 6F 6D 20 6E 69 20 43                       41 00308          .ASCII  \AC in module !!AC> /FAO=3\<0><0><0>
      00 00 00 33 3D 4F 41 46 2F 20 3E 43                       41 00317
20 4F 46 4E 49 2F 53 46 44 4E 49 4C 4F 52                       46 00324 P.AAU:   .ASCII  \FROLINDFS/INFO <from line !!SL in DEF* !\
4C 53 21 21 20 65 6E 69 6C 20 6D 6F 72 66                       3C 00333
                  21 20 2A 46 45 44 20 6E 69                    20 00342
21 20 65 6C 75 64 6F 6D 20 6E 69 20 43 41                       21 0034C          .ASCII  \!AC in module !!AC> /FAO=3\<0><0>
      00 00 33 3D 4F 41 46 2F 20 3E 43 41                       21 0035B
20 4F 46 4E 49 2F 42 53 47 4E 49 4C 4F 52                       46 00368 P.AAV:   .ASCII  \FROLINGSB/INFO <from line !!SL in GOSUB \
4C 53 21 21 20 65 6E 69 6C 20 6D 6F 72 66                       3C 00377
                  20 42 55 53 4F 47 20 6E 69                    20 00386
20 65 6C 75 64 6F 6D 20 6E 69 20 4C 53 21                       21 00390          .ASCII  \!!SL in module !!AC> /FAO=3\<0>
      00 33 3D 4F 41 46 2F 20 3E 43 41 21                       21 0039F
20 4F 46 4E 49 2F 47 45 4F 4E 49 4C 4F 52                       46 003AC P.AAW:   .ASCII  \FROLINOEG/INFO <from line !!SL in ON ERR\
4C 53 21 21 20 65 6E 69 6C 20 6D 6F 72 66                       3C 003BB
                  52 52 45 20 4E 4F 20 6E 69                    20 003CA
6E 69 20 4C 53 21 21 20 4F 54 4F 47 20 52                       4F 003D4          .ASCII  \OR GOTO !!SL in module !!AC> /FAO=3\<0>
2F 20 3E 43 41 21 21 20 65 6C 75 64 6F 6D                       20 003E3
                        00 33 3D 4F 41 46                       2F 003F2
                                    44 4E 45 2E                 00 003F8 P.AAX:   .ASCII  \.END\

                                                                          .EXTRN  SYS$FAO
```

```
                                                        .PSECT  $CODE$,NOWRT,2

                                                00FC 00000 WRITE_FILE:
                                                        .WORD   Save R2,R3,R4,R5,R6,R7                  ; 0365
                    57 00000000G   00   9E 00002        MOVAB   STR$FREE1_DX, R7
                    56       0000V CF   9E 00009        MOVAB   PRINT, R6
                    55 00000000G   00   9E 0000E        MOVAB   STR$COPY_R, R5
                    54 00000000G   00   9E 00015        MOVAB   SYS$FAO, R4
                    53 00000000G   00   9E 0001C        MOVAB   LIB$STOP, R3
                    5E       FF28  CE   9E 00023        MOVAB   -216(SP), SP
                F0  AD 010E0084    8F   D0 00028        MOVL    #17694852, TEMP_STR_DSC                ; 0434
                F4  AD         44  AE   9E 00030        MOVAB   TEMP_STRING, TEMP_STR_DSC+4            ; 0437
                3C  AE 020E0000    8F   D0 00035        MOVL    #34471936, LINE_DESC                   ; 0441
                               40  AE   D4 0003D        CLRL    LINE_DESC+4
                34  AE 020E0000    8F   D0 00040        MOVL    #34471936, PRINTABLE_DESC              ; 0442
                               38  AE   D4 00048        CLRL    PRINTABLE_DESC+4
                2C  AE 020E0000    8F   D0 0004B        MOVL    #34471936, HEX_DESC                    ; 0443
                               30  AE   D4 00053        CLRL    HEX_DESC+4
                24  AE 020E0000    8F   D0 00056        MOVL    #34471936, TEXT                        ; 0444
                               28  AE   D4 0005E        CLRL    TEXT+4
                1C  AE 020E0000    8F   D0 00061        MOVL    #34471936, NAME                        ; 0445
                               20  AE   D4 00069        CLRL    NAME+4
                14  AE 020E0000    8F   D0 0006C        MOVL    #34471936, SEVERITY                    ; 0446
                               18  AE   D4 00074        CLRL    SEVERITY+4
                F8  AD 010E003F    8F   D0 00077        MOVL    #17694783, CTL_STR_DSC                 ; 0450
                FC  AD         0000' CF   9E 0007F        MOVAB   P.AAC, CTL_STR_DSC+4
                                   20   DD 00085        PUSHL   #32
                                   F0  AD   9F 00087        PUSHAB  TEMP_STR_DSC
                                   18  AE   9F 0008A        PUSHAB  OUT_LENGTH
                                   F8  AD   9F 0008D        PUSHAB  CTL_STR_DSC
                            64             04   FB 00090        CALLS   #4, SYS$FAO
                            05             50   E8 00093        BLBS    FAO_STATUS, 1$
                                           50   DD 00096        PUSHL   FAO_STATUS
                            63             01   FB 00098        CALLS   #1, LIB$STOP
                                   F4  AD   DD 0009B 1$:        PUSHL   TEMP_STR_DSC+4
                                   14  AE   9F 0009E        PUSHAB  OUT_LENGTH
                                   44  AE   9F 000A1        PUSHAB  LINE_DESC
                            65             03   FB 000A4        CALLS   #3, STR$COPY_R
                            7D             50   E9 000A7        BLBC    BUILD_STATUS, 4$
                                   3C  AE   9F 000AA        PUSHAB  LINE_DESC
                            52         04  AC   D0 000AD        MOVL    OUTPUT_RAB, R2
                                           52   DD 000B1        PUSHL   R2
                            66             02   FB 000B3        CALLS   #2, PRINT
                            79             50   E9 000B6        BLBC    PRINT_STATUS, 5$
                F8  AD 010E0043    8F   D0 000B9        MOVL    #17694787, CTL_STR_DSC                 ; 0451
                FC  AD         0000' CF   9E 000C1        MOVAB   P.AAD, CTL_STR_DSC+4
                                   20   DD 000C7        PUSHL   #32
                                   F0  AD   9F 000C9        PUSHAB  TEMP_STR_DSC
                                   18  AE   9F 000CC        PUSHAB  OUT_LENGTH
                                   F8  AD   9F 000CF        PUSHAB  CTL_STR_DSC
                            64             04   FB 000D2        CALLS   #4, SYS$FAO
                            05             50   E8 000D5        BLBS    FAO_STATUS, 2$
                                           50   DD 000D8        PUSHL   FAO_STATUS
                            63             01   FB 000DA        CALLS   #1, LIB$STOP
                                   F4  AD   DD 000DD 2$:        PUSHL   TEMP_STR_DSC+4
                                   14  AE   9F 000E0        PUSHAB  OUT_LENGTH
                                   44  AE   9F 000E3        PUSHAB  LINE_DESC
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                     65              03  FB 000E6          CALLS   #3, STR$COPY_R                                    ;
                     79              50  E9 000E9          BLBC    BUILD_STATUS, 7$                                  ;
                           3C        AE  9F 000EC          PUSHAB  LINE_DESC                                         ;
                                     52  DD 000EF          PUSHL   R2                                                ;
                     66              02  FB 000F1          CALLS   #2, PRINT                                         ;
                     79              50  E9 000F4          BLBC    PRINT_STATUS, 8$                                  ;
                  F8 AD 010E0039'    8F  DD 000F7          MOVL    #17694777, CTL_STR_DSC                            ; 0452
                  FC AD      0000'   CF  9E 000FF          MOVAB   P.AAE, CTL_STR_DSC+4                              ;
                                     20  DD 00105          PUSHL   #32                                               ;
                           F0        AD  9F 00107          PUSHAB  TEMP_STR_DSC                                      ;
                           18        AE  9F 0010A          PUSHAB  OUT_LENGTH                                        ;
                           F8        AD  9F 0010D          PUSHAB  CTL_STR_DSC                                       ;
                     64              04  FB 00110          CALLS   #4, SYS$FAO                                       ;
                     05              50  E8 00113          BLBS    FAO_STATUS, 3$                                    ;
                                     50  DD 00116          PUSHL   FAO_STATUS                                        ;
                     63              01  FB 00118          CALLS   #1, LIB$STOP                                      ;
                           F4        AD  DD 0011B 3$:      PUSHL   TEMP_STR_DSC+4                                    ;
                           14        AE  9F 0011E          PUSHAB  OUT_LENGTH                                        ;
                           44        AE  9F 00121          PUSHAB  LINE_DESC                                         ;
                     65              03  FB 00124          CALLS   #3, STR$COPY_R                                    ;
                     79              50  E9 00127 4$:      BLBC    BUILD_STATUS, 10$                                 ;
                           3C        AE  9F 0012A          PUSHAB  LINE_DESC                                         ;
                                     52  DD 0012D          PUSHL   R2                                                ;
                     66              02  FB 0012F          CALLS   #2, PRINT                                         ;
                     79              50  E9 00132 5$:      BLBC    PRINT_STATUS, 11$                                 ;
                  F8 AD 010E0002'    8F  DD 00135          MOVL    #17694722, CTL_STR_DSC                            ; 0453
                  FC AD      0000'   CF  9E 0013D          MOVAB   P.AAF, CTL_STR_DSC+4                              ;
                                     20  DD 00143          PUSHL   #32                                               ;
                           F0        AD  9F 00145          PUSHAB  TEMP_STR_DSC                                      ;
                           18        AE  9F 00148          PUSHAB  OUT_LENGTH                                        ;
                           F8        AD  9F 0014B          PUSHAB  CTL_STR_DSC                                       ;
                     64              04  FB 0014E          CALLS   #4, SYS$FAO                                       ;
                     05              50  E8 00151          BLBS    FAO_STATUS, 6$                                    ;
                                     50  DD 00154          PUSHL   FAO_STATUS                                        ;
                     63              01  FB 00156          CALLS   #1, LIB$STOP                                      ;
                           F4        AD  DD 00159 6$:      PUSHL   TEMP_STR_DSC+4                                    ;
                           14        AE  9F 0015C          PUSHAB  OUT_LENGTH                                        ;
                           44        AE  9F 0015F          PUSHAB  LINE_DESC                                         ;
                     65              03  FB 00162          CALLS   #3, STR$COPY_R                                    ;
                     79              50  E9 00165 7$:      BLBC    BUILD_STATUS, 13$                                 ;
                           3C        AE  9F 00168          PUSHAB  LINE_DESC                                         ;
                                     52  DD 0016B          PUSHL   R2                                                ;
                     66              02  FB 0016D          CALLS   #2, PRINT                                         ;
                     79              50  E9 00170 8$:      BLBC    PRINT_STATUS, 14$                                 ;
                  F8 AD 010E0023'    8F  DD 00173          MOVL    #17694755, CTL_STR_DSC                            ; 0454
                  FC AD      0000'   CF  9E 0017B          MOVAB   P.AAG, CTL_STR_DSC+4                              ;
                                     20  DD 00181          PUSHL   #32                                               ;
                           F0        AD  9F 00183          PUSHAB  TEMP_STR_DSC                                      ;
                           18        AE  9F 00186          PUSHAB  OUT_LENGTH                                        ;
                           F8        AD  9F 00189          PUSHAB  CTL_STR_DSC                                       ;
                     64              04  FB 0018C          CALLS   #4, SYS$FAO                                       ;
                     05              50  E8 0018F          BLBS    FAO_STATUS, 9$                                    ;
                                     50  DD 00192          PUSHL   FAO_STATUS                                        ;
                     63              01  FB 00194          CALLS   #1, LIB$STOP                                      ;
                           F4        AD  DD 00197 9$:      PUSHL   TEMP_STR_DSC+4                                    ;
                           14        AE  9F 0019A          PUSHAB  OUT_LENGTH                                        ;
                           44        AE  9F 0019D          PUSHAB  LINE_DESC                                         ;
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                  65              03  FB  001A0        CALLS   #3, STR$COPY_R                          ;
                  79              50  E9  001A3  10$:  BLBC    BUILD_STATUS, 16$                       ;
                        3C        AE  9F  001A6        PUSHAB  LINE_DESC                               ;
                                  52  DD  001A9        PUSHL   R2                                      ;
                  66              02  FB  001AB        CALLS   #2, PRINT                               ;
                  79              50  E9  001AE  11$:  BLBC    PRINT_STATUS, 17$                       ;
            F8    AD  010E0002    8F  D0  001B1        MOVL    #17694722, CTL_STR_DSC                  ; 0455
            FC    AD      0000'   CF  9E  001B9        MOVAB   P.AAH, CTL_STR_DSC+4                    ;
                                  20  DD  001BF        PUSHL   #32                                     ;
                        F0        AD  9F  001C1        PUSHAB  TEMP_STR_DSC                            ;
                        18        AE  9F  001C4        PUSHAB  OUT_LENGTH                              ;
                        F8        AD  9F  001C7        PUSHAB  CTL_STR_DSC                             ;
                  64              04  FB  001CA        CALLS   #4, SYS$FAO                             ;
                  05              50  E8  001CD        BLBS    FAO_STATUS, 12$                         ;
                                  50  DD  001D0        PUSHL   FAO_STATUS                              ;
                  63              01  FB  001D2        CALLS   #1, LIB$STOP                            ;
                        F4        AD  DD  001D5  12$:  PUSHL   TEMP_STR_DSC+4                          ;
                        14        AE  9F  001D8        PUSHAB  OUT_LENGTH                              ;
                        44        AE  9F  001DB        PUSHAB  LINE_DESC                               ;
                  65              03  FB  001DE        CALLS   #3, STR$COPY_R                          ;
                  79              50  E9  001E1  13$:  BLBC    BUILD_STATUS, 19$                       ;
                        3C        AE  9F  001E4        PUSHAB  LINE_DESC                               ;
                                  52  DD  001E7        PUSHL   R2                                      ;
                  66              02  FB  001E9        CALLS   #2, PRINT                               ;
                  79              50  E9  001EC  14$:  BLBC    PRINT_STATUS, 20$                       ;
            F8    AD  010E0019    8F  D0  001EF        MOVL    #17694745, CTL_STR_DSC                  ; 0456
            FC    AD      0000'   CF  9E  001F7        MOVAB   P.AAI, CTL_STR_DSC+4                    ;
                                  1A  DD  001FD        PUSHL   #26                                     ;
                        F0        AD  9F  001FF        PUSHAB  TEMP_STR_DSC                            ;
                        18        AE  9F  00202        PUSHAB  OUT_LENGTH                              ;
                        F8        AD  9F  00205        PUSHAB  CTL_STR_DSC                             ;
                  64              04  FB  00208        CALLS   #4, SYS$FAO                             ;
                  05              50  E8  0020B        BLBS    FAO_STATUS, 15$                         ;
                                  50  DD  0020E        PUSHL   FAO_STATUS                              ;
                  63              01  FB  00210        CALLS   #1, LIB$STOP                            ;
                        F4        AD  DD  00213  15$:  PUSHL   TEMP_STR_DSC+4                          ;
                        14        AE  9F  00216        PUSHAB  OUT_LENGTH                              ;
                        44        AE  9F  00219        PUSHAB  LINE_DESC                               ;
                  65              03  FB  0021C        CALLS   #3, STR$COPY_R                          ;
                  46              50  E9  0021F  16$:  BLBC    BUILD_STATUS, 20$                       ;
                        3C        AE  9F  00222        PUSHAB  LINE_DESC                               ;
                                  52  DD  00225        PUSHL   R2                                      ;
                  66              02  FB  00227        CALLS   #2, PRINT                               ;
                  3B              50  E9  0022A  17$:  BLBC    PRINT_STATUS, 20$                       ;
            F8    AD  010E0007    8F  D0  0022D        MOVL    #17694727, CTL_STR_DSC                  ; 0457
            FC    AD      0000'   CF  9E  00235        MOVAB   P.AAJ, CTL_STR_DSC+4                    ;
                                  20  DD  0023B        PUSHL   #32                                     ;
                        F0        AD  9F  0023D        PUSHAB  TEMP_STR_DSC                            ;
                        18        AE  9F  00240        PUSHAB  OUT_LENGTH                              ;
                        F8        AD  9F  00243        PUSHAB  CTL_STR_DSC                             ;
                  64              04  FB  00246        CALLS   #4, SYS$FAO                             ;
                  05              50  E8  00249        BLBS    FAO_STATUS, 18$                         ;
                                  50  DD  0024C        PUSHL   FAO_STATUS                              ;
                  63              01  FB  0024E        CALLS   #1, LIB$STOP                            ;
                        F4        AD  DD  00251  18$:  PUSHL   TEMP_STR_DSC+4                          ;
                        14        AE  9F  00254        PUSHAB  OUT_LENGTH                              ;
                        44        AE  9F  00257        PUSHAB  LINE_DESC                               ;
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                      65         03  FB 0025A        CALLS    #3, STR$COPY_R                         :
                      6C         50  E9 0025D 19$:   BLBC     BUILD_STATUS, 23$                      :
                            3C   AE  9F 00260        PUSHAB   LINE_DESC                              :
                                 52  DD 00263        PUSHL    R2                                     :
                      66         02  FB 00265        CALLS    #2, PRINT                              :
                      61         50  E9 00268 20$:   BLBC     PRINT_STATUS, 23$                      :
                            0C   AE  D4 0026B        CLRL     CODE                                   : 0462
                            14   AE  9F 0026E 21$:   PUSHAB   SEVERITY                               : 0464
                            04   AE  9F 00271        PUSHAB   SEVLEN                                 :
                            2C   AE  9F 00274        PUSHAB   TEXT                                   :
                            10   AE  9F 00277        PUSHAB   TXTLEN                                 :
                            2C   AE  9F 0027A        PUSHAB   NAME                                   :
                            1C   AE  9F 0027D        PUSHAB   NAMLEN                                 :
                            24   AE  9F 00280        PUSHAB   CODE                                   :
           00000000G  00         07  FB 00283        CALLS    #7, ERRTXT                             :
                  F8  AD 010E000D    8F  D0 0028A        MOVL     #17694733, CTL_STR_DSC                 : 0466
                  FC  AD     0000'   CF  9E 00292        MOVAB    P.AAK, CTL_STR_DSC+4                   :
                            24   AE  9F 00298        PUSHAB   TEXT                                   :
                            18   AE  9F 0029B        PUSHAB   SEVERITY                               :
                            24   AE  9F 0029E        PUSHAB   NAME                                   :
                            F0   AD  9F 002A1        PUSHAB   TEMP_STR_DSC                           :
                            20   AE  9F 002A4        PUSHAB   OUT_LENGTH                             :
                            F8   AD  9F 002A7        PUSHAB   CTL_STR_DSC                            :
                      64         06  FB 002AA        CALLS    #6, SYS$FAO                            :
                      05         50  E8 002AD        BLBS     FAO_STATUS, 22$                        :
                                 50  DD 002B0        PUSHL    FAO_STATUS                             :
                      63         01  FB 002B2        CALLS    #1, LIB$STOP                           :
                            F4   AD  DD 002B5 22$:   PUSHL    TEMP_STR_DSC+4                         :
                            14   AE  9F 002B8        PUSHAB   OUT_LENGTH                             :
                            44   AE  9F 002BB        PUSHAB   LINE_DESC                              :
                      65         03  FB 002BE        CALLS    #3, STR$COPY_R                         :
                      4F         50  E9 002C1        BLBC     BUILD_STATUS, 25$                      :
                            3C   AE  9F 002C4        PUSHAB   LINE_DESC                              :
                                 52  DD 002C7        PUSHL    R2                                     :
                      66         02  FB 002C9        CALLS    #2, PRINT                              :
                      77         50  E9 002CC 23$:   BLBC     PRINT_STATUS, 27$                      :
      96          0C  AE 000000FF    8F  F3 002CF        AOBLEQ   #255, CODE, 21$                        : 0462
                  F8  AD 010E000A    8F  D0 002D8        MOVL     #17694730, CTL_STR_DSC                 : 0472
                  FC  AD     0000'   CF  9E 002E0        MOVAB    P.AAL, CTL_STR_DSC+4                   :
                                 20  DD 002E6        PUSHL    #32                                    :
                            F0   AD  9F 002E8        PUSHAB   TEMP_STR_DSC                           :
                            18   AE  9F 002EB        PUSHAB   OUT_LENGTH                             :
                            F8   AD  9F 002EE        PUSHAB   CTL_STR_DSC                            :
                      64         04  FB 002F1        CALLS    #4, SYS$FAO                            :
                      05         50  E8 002F4        BLBS     FAO_STATUS, 24$                        :
                                 50  DD 002F7        PUSHL    FAO_STATUS                             :
                      63         01  FB 002F9        CALLS    #1, LIB$STOP                           :
                            F4   AD  DD 002FC 24$:   PUSHL    TEMP_STR_DSC+4                         :
                            14   AE  9F 002FF        PUSHAB   OUT_LENGTH                             :
                            44   AE  9F 00302        PUSHAB   LINE_DESC                              :
                      65         03  FB 00305        CALLS    #3, STR$COPY_R                         :
                      79         50  E9 00308        BLBC     BUILD_STATUS, 29$                      :
                            3C   AE  9F 0030B        PUSHAB   LINE_DESC                              :
                                 52  DD 0030E        PUSHL    R2                                     :
                      66         02  FB 00310        CALLS    #2, PRINT                              :
                      79         50  E9 00313 25$:   BLBC     PRINT_STATUS, 30$                      :
                  F8  AD 010E0035    8F  D0 00316        MOVL     #17694773, CTL_STR_DSC                 : 0473
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                FC    AD      0000'  CF   9E 0031E           MOVAB   P.AAM, CTL_STR_DSC+4                    ;
                                     20   DD 00324           PUSHL   #32                                     ;
                                  F0   AD   9F 00326           PUSHAB  TEMP_STR_DSC                            ;
                                  18   AE   9F 00329           PUSHAB  OUT_LENGTH                              ;
                                  F8   AD   9F 0032C           PUSHAB  CTL_STR_DSC                             ;
                              64       04   FB 0032F           CALLS   #4, SYS$FAO                             ;
                              05       50   E8 00332           BLBS    FAO_STATUS, 26$                         ;
                                       50   DD 00335           PUSHL   FAO_STATUS                              ;
                              63       01   FB 00337           CALLS   #1, LIB$STOP                            ;
                                  F4   AD   DD 0033A 26$:      PUSHL   TEMP_STR_DSC+4                          ;
                                  14   AE   9F 0033D           PUSHAB  OUT_LENGTH                              ;
                                  44   AE   9F 00340           PUSHAB  LINE_DESC                               ;
                              65       03   FB 00343           CALLS   #3, STR$COPY_R                          ;
                              79       50   E9 00346 27$:      BLBC    BUILD_STATUS, 32$                       ;
                                  3C   AE   9F 00349           PUSHAB  LINE_DESC                               ;
                                       52   DD 0034C           PUSHL   R2                                      ;
                              66       02   FB 0034E           CALLS   #2, PRINT                               ;
                              79       50   E9 00351           BLBC    PRINT_STATUS, 33$                       ;
                F8    AD 010E0031    8F   D0 00354           MOVL    #17694769, CTL_STR_DSC                  ; 0474
                FC    AD      0000'  CF   9E 0035C           MOVAB   P.AAN, CTL_STR_DSC+4                    ;
                                     20   DD 00362           PUSHL   #32                                     ;
                                  F0   AD   9F 00364           PUSHAB  TEMP_STR_DSC                            ;
                                  18   AE   9F 00367           PUSHAB  OUT_LENGTH                              ;
                                  F8   AD   9F 0036A           PUSHAB  CTL_STR_DSC                             ;
                              64       04   FB 0036D           CALLS   #4, SYS$FAO                             ;
                              05       50   E8 00370           BLBS    FAO_STATUS, 28$                         ;
                                       50   DD 00373           PUSHL   FAO_STATUS                              ;
                              63       01   FB 00375           CALLS   #1, LIB$STOP                            ;
                                  F4   AD   DD 00378 28$:      PUSHL   TEMP_STR_DSC+4                          ;
                                  14   AE   9F 0037B           PUSHAB  OUT_LENGTH                              ;
                                  44   AE   9F 0037E           PUSHAB  LINE_DESC                               ;
                              65       03   FB 00381           CALLS   #3, STR$COPY_R                          ;
                              79       50   E9 00384 29$:      BLBC    BUILD_STATUS, 35$                       ;
                                  3C   AE   9F 00387           PUSHAB  LINE_DESC                               ;
                                       52   DD 0038A           PUSHL   R2                                      ;
                              66       02   FB 0038C           CALLS   #2, PRINT                               ;
                              79       50   E9 0038F 30$:      BLBC    PRINT_STATUS, 36$                       ;
                F8    AD 010E0037    8F   D0 00392           MOVL    #17694775, CTL_STR_DSC                  ; 0475
                FC    AD      0000'  CF   9E 0039A           MOVAB   P.AAO, CTL_STR_DSC+4                    ;
                                     20   DD 003A0           PUSHL   #32                                     ;
                                  F0   AD   9F 003A2           PUSHAB  TEMP_STR_DSC                            ;
                                  18   AE   9F 003A5           PUSHAB  OUT_LENGTH                              ;
                                  F8   AD   9F 003A8           PUSHAB  CTL_STR_DSC                             ;
                              64       04   FB 003AB           CALLS   #4, SYS$FAO                             ;
                              05       50   E8 003AE           BLBS    FAO_STATUS, 31$                         ;
                                       50   DD 003B1           PUSHL   FAO_STATUS                              ;
                              63       01   FB 003B3           CALLS   #1, LIB$STOP                            ;
                                  F4   AD   DD 003B6 31$:      PUSHL   TEMP_STR_DSC+4                          ;
                                  14   AE   9F 003B9           PUSHAB  OUT_LENGTH                              ;
                                  44   AE   9F 003BC           PUSHAB  LINE_DESC                               ;
                              65       03   FB 003BF           CALLS   #3, STR$COPY_R                          ;
                              79       50   E9 003C2 32$:      BLBC    BUILD_STATUS, 38$                       ;
                                  3C   AE   9F 003C5           PUSHAB  LINE_DESC                               ;
                                       52   DD 003C8           PUSHL   R2                                      ;
                              66       02   FB 003CA           CALLS   #2, PRINT                               ;
                              79       50   E9 003CD 33$:      BLBC    PRINT_STATUS, 39$                       ;
                F8    AD 010E0045    8F   D0 003D0           MOVL    #17694789, CTL_STR_DSC                  ; 0476
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                FC  AD      0000'  CF  9E 003D8          MOVAB   P.AAP, CTL_STR_DSC+4
                                   20  DD 003DE          PUSHL   #32
                            F0     AD  9F 003E0          PUSHAB  TEMP_STR_DSC
                            18     AE  9F 003E3          PUSHAB  OUT_LENGTH
                            F8     AD  9F 003E6          PUSHAB  CTL_STR_DSC
                        64                 04  FB 003E9          CALLS   #4, SYS$FAO
                        05                 50  E8 003EC          BLBS    FAO_STATUS, 34$
                                           50  DD 003EF          PUSHL   FAO_STATUS
                        63                 01  FB 003F1          CALLS   #1, LIB$STOP
                            F4     AD  DD 003F4 34$:      PUSHL   TEMP_STR_DSC+4
                            14     AE  9F 003F7          PUSHAB  OUT_LENGTH
                            44     AE  9F 003FA          PUSHAB  LINE_DESC
                        65                 03  FB 003FD          CALLS   #3, STR$COPY_R
                        79                 50  E9 00400 35$:      BLBC    BUILD_STATUS, 41$
                            3C     AE  9F 00403          PUSHAB  LINE_DESC
                                   52  DD 00406          PUSHL   R2
                        66                 02  FB 00408          CALLS   #2, PRINT
                        79                 50  E9 0040B 36$:      BLBC    PRINT_STATUS, 42$
                F8  AD  010E0035   8F  D0 0040E          MOVL    #17694773, CTL_STR_DSC
                FC  AD      0000'  CF  9E 00416          MOVAB   P.AAQ, CTL_STR_DSC+4
                                   20  DD 0041C          PUSHL   #32
                            F0     AD  9F 0041E          PUSHAB  TEMP_STR_DSC
                            18     AE  9F 00421          PUSHAB  OUT_LENGTH
                            F8     AD  9F 00424          PUSHAB  CTL_STR_DSC
                        64                 04  FB 00427          CALLS   #4, SYS$FAO
                        05                 50  E8 0042A          BLBS    FAO_STATUS, 37$
                                           50  DD 0042D          PUSHL   FAO_STATUS
                        63                 01  FB 0042F          CALLS   #1, LIB$STOP
                            F4     AD  DD 00432 37$:      PUSHL   TEMP_STR_DSC+4
                            14     AE  9F 00435          PUSHAB  OUT_LENGTH
                            44     AE  9F 00438          PUSHAB  LINE_DESC
                        65                 03  FB 0043B          CALLS   #3, STR$COPY_R
                        79                 50  E9 0043E 38$:      BLBC    BUILD_STATUS, 44$
                            3C     AE  9F 00441          PUSHAB  LINE_DESC
                                   52  DD 00444          PUSHL   R2
                        66                 02  FB 00446          CALLS   #2, PRINT
                        79                 50  E9 00449 39$:      BLBC    PRINT_STATUS, 45$
                F8  AD  010E0039   8F  D0 0044C          MOVL    #17694777, CTL_STR_DSC
                FC  AD      0000'  CF  9E 00454          MOVAB   P.AAR, CTL_STR_DSC+4
                                   20  DD 0045A          PUSHL   #32
                            F0     AD  9F 0045C          PUSHAB  TEMP_STR_DSC
                            18     AE  9F 0045F          PUSHAB  OUT_LENGTH
                            F8     AD  9F 00462          PUSHAB  CTL_STR_DSC
                        64                 04  FB 00465          CALLS   #4, SYS$FAO
                        05                 50  E8 00468          BLBS    FAO_STATUS, 40$
                                           50  DD 0046B          PUSHL   FAO_STATUS
                        63                 01  FB 0046D          CALLS   #1, LIB$STOP
                            F4     AD  DD 00470 40$:      PUSHL   TEMP_STR_DSC+4
                            14     AE  9F 00473          PUSHAB  OUT_LENGTH
                            44     AE  9F 00476          PUSHAB  LINE_DESC
                        65                 03  FB 00479          CALLS   #3, STR$COPY_R
                        79                 50  E9 0047C 41$:      BLBC    BUILD_STATUS, 47$
                            3C     AE  9F 0047F          PUSHAB  LINE_DESC
                                   52  DD 00482          PUSHL   R2
                        66                 02  FB 00484          CALLS   #2, PRINT
                        79                 50  E9 00487 42$:      BLBC    PRINT_STATUS, 48$
                F8  AD  010E0040   8F  D0 0048A          MOVL    #17694784, CTL_STR_DSC
```

```
                FC  AD     0000'  CF  9E 00492          MOVAB   P.AAS, CTL_STR_DSC+4                    ;
                                  20  DD 00498          PUSHL   #32                                     ;
                              F0  AD  9F 0049A          PUSHAB  TEMP_STR_DSC                            ;
                              18  AE  9F 0049D          PUSHAB  OUT_LENGTH                              ;
                              F8  AD  9F 004A0          PUSHAB  CTL_STR_DSC                             ;
                        64            04  FB 004A3          CALLS   #4, SYS$FAO                             ;
                        05            50  E8 004A6          BLBS    FAO_STATUS, 43$                         ;
                                      50  DD 004A9          PUSHL   FAO_STATUS                              ;
                        63            01  FB 004AB          CALLS   #1, LIB$STOP                            ;
                              F4  AD  DD 004AE 43$:       PUSHL   TEMP_STR_DSC+4                          ;
                              14  AE  9F 004B1           PUSHAB  OUT_LENGTH                              ;
                              44  AE  9F 004B4           PUSHAB  LINE_DESC                               ;
                        65            03  FB 004B7          CALLS   #3, STR$COPY_R                          ;
                        79            50  E9 004BA 44$:       BLBC    BUILD_STATUS, 50$                       ;
                              3C  AE  9F 004BD           PUSHAB  LINE_DESC                               ;
                                  52  DD 004C0          PUSHL   R2                                      ;
                        66            02  FB 004C2          CALLS   #2, PRINT                               ;
                        79            50  E9 004C5 45$:       BLBC    PRINT_STATUS, 51$                       ;
                F8  AD 010E0041   8F  D0 004C8          MOVL    #17694785, CTL_STR_DSC                  ; 0480
                FC  AD     0000'  CF  9E 004D0          MOVAB   P.AAT, CTL_STR_DSC+4                    ;
                                  20  DD 004D6          PUSHL   #32                                     ;
                              F0  AD  9F 004D8          PUSHAB  TEMP_STR_DSC                            ;
                              18  AE  9F 004DB          PUSHAB  OUT_LENGTH                              ;
                              F8  AD  9F 004DE          PUSHAB  CTL_STR_DSC                             ;
                        64            04  FB 004E1          CALLS   #4, SYS$FAO                             ;
                        05            50  E8 004E4          BLBS    FAO_STATUS, 46$                         ;
                                      50  DD 004E7          PUSHL   FAO_STATUS                              ;
                        63            01  FB 004E9          CALLS   #1, LIB$STOP                            ;
                              F4  AD  DD 004EC 46$:       PUSHL   TEMP_STR_DSC+4                          ;
                              14  AE  9F 004EF           PUSHAB  OUT_LENGTH                              ;
                              44  AE  9F 004F2           PUSHAB  LINE_DESC                               ;
                        65            03  FB 004F5          CALLS   #3, STR$COPY_R                          ;
                        79            50  E9 004F8 47$:       BLBC    BUILD_STATUS, 53$                       ;
                              3C  AE  9F 004FB           PUSHAB  LINE_DESC                               ;
                                  52  DD 004FE          PUSHL   R2                                      ;
                        66            02  FB 00500          CALLS   #2, PRINT                               ;
                        79            50  E9 00503 48$:       BLBC    PRINT_STATUS, 54$                       ;
                F8  AD 010E0042   8F  D0 00506          MOVL    #17694786, CTL_STR_DSC                  ; 0481
                FC  AD     0000'  CF  9E 0050E          MOVAB   P.AAU, CTL_STR_DSC+4                    ;
                                  20  DD 00514          PUSHL   #32                                     ;
                              F0  AD  9F 00516          PUSHAB  TEMP_STR_DSC                            ;
                              18  AE  9F 00519          PUSHAB  OUT_LENGTH                              ;
                              F8  AD  9F 0051C          PUSHAB  CTL_STR_DSC                             ;
                        64            04  FB 0051F          CALLS   #4, SYS$FAO                             ;
                        05            50  E8 00522          BLBS    FAO_STATUS, 49$                         ;
                                      50  DD 00525          PUSHL   FAO_STATUS                              ;
                        63            01  FB 00527          CALLS   #1, LIB$STOP                            ;
                              F4  AD  DD 0052A 49$:       PUSHL   TEMP_STR_DSC+4                          ;
                              14  AE  9F 0052D           PUSHAB  OUT_LENGTH                              ;
                              44  AE  9F 00530           PUSHAB  LINE_DESC                               ;
                        65            03  FB 00533          CALLS   #3, STR$COPY_R                          ;
                        79            50  E9 00536 50$:       BLBC    BUILD_STATUS, 56$                       ;
                              3C  AE  9F 00539           PUSHAB  LINE_DESC                               ;
                                  52  DD 0053C          PUSHL   R2                                      ;
                        66            02  FB 0053E          CALLS   #2, PRINT                               ;
                        79            50  E9 00541 51$:       BLBC    PRINT_STATUS, 57$                       ;
                F8  AD 010E0043   8F  D0 00544          MOVL    #17694787, CTL_STR_DSC                  ; 0482
```

```
                     FC   AD      0000'  CF   9E 0054C          MOVAB   P.AAV, CTL_STR_DSC+4
                                         20   DD 00552          PUSHL   #32
                                   F0    AD   9F 00554          PUSHAB  TEMP_STR_DSC
                                   18    AE   9F 00557          PUSHAB  OUT_LENGTH
                                   F8    AD   9F 0055A          PUSHAB  CTL_STR_DSC
                                64         04   FB 0055D          CALLS   #4, SYS$FAO
                                05         50   E8 00560          BLBS    FAO_STATUS, 52$
                                           50   DD 00563          PUSHL   FAO_STATUS
                                63         01   FB 00565          CALLS   #1, LIB$STOP
                                   F4    AD   DD 00568 52$:       PUSHL   TEMP_STR_DSC+4
                                   14    AE   9F 0056B          PUSHAB  OUT_LENGTH
                                   44    AE   9F 0056E          PUSHAB  LINE_DESC
                                65         03   FB 00571          CALLS   #3, STR$COPY_R
                                79         50   E9 00574 53$:       BLBC    BUILD_STATUS, 59$
                                   3C    AE   9F 00577          PUSHAB  LINE_DESC
                                           52   DD 0057A          PUSHL   R2
                                66         02   FB 0057C          CALLS   #2, PRINT
                                79         50   E9 0057F 54$:       BLBC    PRINT_STATUS, 60$
                     F8   AD 010E004B      8F   D0 00582          MOVL    #17694795, CTL_STR_DSC                  ; 0483
                     FC   AD      0000'  CF   9E 0058A          MOVAB   P.AAW, CTL_STR_DSC+4
                                         20   DD 00590          PUSHL   #32
                                   F0    AD   9F 00592          PUSHAB  TEMP_STR_DSC
                                   18    AE   9F 00595          PUSHAB  OUT_LENGTH
                                   F8    AD   9F 00598          PUSHAB  CTL_STR_DSC
                                64         04   FB 0059B          CALLS   #4, SYS$FAO
                                05         50   E8 0059E          BLBS    FAO_STATUS, 55$
                                           50   DD 005A1          PUSHL   FAO_STATUS
                                63         01   FB 005A3          CALLS   #1, LIB$STOP
                                   F4    AD   DD 005A6 55$:       PUSHL   TEMP_STR_DSC+4
                                   14    AE   9F 005A9          PUSHAB  OUT_LENGTH
                                   44    AE   9F 005AC          PUSHAB  LINE_DESC
                                65         03   FB 005AF          CALLS   #3, STR$COPY_R
                                46         50   E9 005B2 56$:       BLBC    BUILD_STATUS, 60$
                                   3C    AE   9F 005B5          PUSHAB  LINE_DESC
                                           52   DD 005B8          PUSHL   R2
                                66         02   FB 005BA          CALLS   #2, PRINT
                                3B         50   E9 005BD 57$:       BLBC    PRINT_STATUS, 60$
                  F8   AD 010E0004      8F   D0 005C0          MOVL    #17694724, CTL_STR_DSC                  ; 0488
                  FC   AD      0000'  CF   9E 005C8          MOVAB   P.AAX, CTL_STR_DSC+4
                                         20   DD 005CE          PUSHL   #32
                                   F0    AD   9F 005D0          PUSHAB  TEMP_STR_DSC
                                   18    AE   9F 005D3          PUSHAB  OUT_LENGTH
                                   F8    AD   9F 005D6          PUSHAB  CTL_STR_DSC
                                64         04   FB 005D9          CALLS   #4, SYS$FAO
                                05         50   E8 005DC          BLBS    FAO_STATUS, 58$
                                           50   DD 005DF          PUSHL   FAO_STATUS
                                63         01   FB 005E1          CALLS   #1, LIB$STOP
                                   F4    AD   DD 005E4 58$:       PUSHL   TEMP_STR_DSC+4
                                   14    AE   9F 005E7          PUSHAB  OUT_LENGTH
                                   44    AE   9F 005EA          PUSHAB  LINE_DESC
                                65         03   FB 005ED          CALLS   #3, STR$COPY_R
                                62         50   E9 005F0 59$:       BLBC    BUILD_STATUS, 67$
                                   3C    AE   9F 005F3          PUSHAB  LINE_DESC
                                           52   DD 005F6          PUSHL   R2
                                66         02   FB 005F8          CALLS   #2, PRINT
                                57         50   E9 005FB 60$:       BLBC    PRINT_STATUS, 67$
                                   3C    AE   9F 005FE          PUSHAB  LINE_DESC                               ; 0492
```

```
                                67              01  FB 00601          CALLS   #1, STR$FREE1_DX                          ;
                                05              50  E8 00604          BLBS    FREE_STATUS, 61$                        ;
                                                50  DD 00607          PUSHL   FREE_STATUS                             ;
                                63              01  FB 00609          CALLS   #1, LIB$STOP                            ;
                                34              AE  9F 0060C 61$:     PUSHAB  PRINTABLE_DESC                          ; 0493
                                67              01  FB 0060F          CALLS   #1, STR$FREE1_DX                        ;
                                05              50  E8 00612          BLBS    FREE_STATUS, 62$                        ;
                                                50  DD 00615          PUSHL   FREE_STATUS                             ;
                                63              01  FB 00617          CALLS   #1, LIB$STOP                            ;
                                2C              AE  9F 0061A 62$:     PUSHAB  HEX_DESC                                ; 0494
                                67              01  FB 0061D          CALLS   #1, STR$FREE1_DX                        ;
                                05              50  E8 00620          BLBS    FREE_STATUS, 63$                        ;
                                                50  DD 00623          PUSHL   FREE_STATUS                             ;
                                63              01  FB 00625          CALLS   #1, LIB$STOP                            ;
                                24              AE  9F 00628 63$:     PUSHAB  TEXT                                    ; 0495
                                67              01  FB 0062B          CALLS   #1, STR$FREE1_DX                        ;
                                05              50  E8 0062E          BLBS    FREE_STATUS, 64$                        ;
                                                50  DD 00631          PUSHL   FREE_STATUS                             ;
                                63              01  FB 00633          CALLS   #1, LIB$STOP                            ;
                                1C              AE  9F 00636 64$:     PUSHAB  NAME                                    ; 0496
                                67              01  FB 00639          CALLS   #1, STR$FREE1_DX                        ;
                                05              50  E8 0063C          BLBS    FREE_STATUS, 65$                        ;
                                                50  DD 0063F          PUSHL   FREE_STATUS                             ;
                                63              01  FB 00641          CALLS   #1, LIB$STOP                            ;
                                14              AE  9F 00644 65$:     PUSHAB  SEVERITY                                ; 0497
                                67              01  FB 00647          CALLS   #1, STR$FREE1_DX                        ;
                                05              50  E8 0064A          BLBS    FREE_STATUS, 66$                        ;
                                                50  DD 0064D          PUSHL   FREE_STATUS                             ;
                                63              01  FB 0064F          CALLS   #1, LIB$STOP                            ;
                                50              01  D0 00652 66$:     MOVL    #1, R0                                  ; 0498
                                                    04 00655 67$:     RET                                             ; 0499

; Routine Size:  1622 bytes,    Routine Base:  $CODE$ + 0162
```

```
;  505          0500  1 %SBTTL 'PRINT - print a text line on a file'
;  506          0501  1 ROUTINE PRINT (                                  ! Print a text line on a file
;  507          0502  1         RAB_ADDR,                                ! RAB onto which to print the line
;  508          0503  1         TEXT_LINE                                ! Descriptor of the line to print
;  509          0504  1     ) =
;  510          0505  1
;  511          0506  1 !++
;  512          0507  1 ! FUNCTIONAL DESCRIPTION:
;  513          0508  1 !
;  514          0509  1 !       This routine interfaces to RMS to print a line of text.
;  515          0510  1 !
;  516          0511  1 ! CALLING SEQUENCE:
;  517          0512  1 !
;  518          0513  1 !       ret_status.wlc.v = PRINT (RAB_ADDR.mz.r, TEXT_LINE.rt.dx)
;  519          0514  1 !
;  520          0515  1 ! FORMAL PARAMETERS:
;  521          0516  1 !
;  522          0517  1 !       RAB_ADDR                Pointer to the RAB onto which to print the line of text
;  523          0518  1 !       TEXT_LINE               Descriptor for the line of text to be printed.
;  524          0519  1 !
;  525          0520  1 ! IMPLICIT INPUTS:
;  526          0521  1 !
;  527          0522  1 !       NONE
;  528          0523  1 !
;  529          0524  1 ! IMPLICIT OUTPUTS:
;  530          0525  1 !
;  531          0526  1 !       NONE
;  532          0527  1 !
;  533          0528  1 ! COMPLETION STATUS:
;  534          0529  1 !
;  535          0530  1 !       SS$_NORMAL      Normal successful completion
;  536          0531  1 !       All RMS errors are returned to the caller, so that they can be
;  537          0532  1 !       signalled with the file name.
;  538          0533  1 !
;  539          0534  1 ! SIDE EFFECTS:
;  540          0535  1 !
;  541          0536  1 !       Does a $PUT to the RAB.
;  542          0537  1 !
;  543          0538  1 !--
;  544          0539  1
;  545          0540  2     BEGIN
;  546          0541  2
;  547          0542  2     MAP
;  548          0543  2         RAB_ADDR : REF $RAB_DECL,
;  549          0544  2         TEXT_LINE : REF BLOCK [8, BYTE];
;  550          0545  2
;  551          0546  2     LOCAL
;  552          0547  2         PUT_STATUS;
;  553          0548  2
;  554          0549  2 !+
;  555          0550  2 ! Fill in the RAB fields.
;  556          0551  2 !-
;  557          0552  2     RAB_ADDR [RAB$W_RSZ] = .TEXT_LINE [DSC$W_LENGTH];
;  558          0553  2     RAB_ADDR [RAB$L_RBF] = .TEXT_LINE [DSC$A_POINTER];
;  559          0554  2 !+
;  560          0555  2 ! Now do the $PUT
;  561          0556  2 !-
```

```
;  562          0557  2      PUT_STATUS = $PUT (RAB = .RAB_ADDR);
;  563          0558  2
;  564          0559  2      IF ( NOT .PUT_STATUS) THEN RETURN (.PUT_STATUS);
;  565          0560  2
;  566          0561  2      RETURN (SS$_NORMAL);
;  567          0562  1      END;                                      ! End of routine PRINT


                                                        .EXTRN  SYS$PUT

                                  0000 00000 PRINT:     .WORD   Save nothing                              ; 0501
                 51        04  AC  D0 00002             MOVL    RAB_ADDR, R1                              ; 0552
                 50        08  AC  D0 00006             MOVL    TEXT_LINE, R0                             ;
            22   A1            60  B0 0000A             MOVW    (R0), 34(R1)                              ;
            28   A1        04  A0  D0 0000E             MOVL    4(R0), 40(R1)                             ; 0553
                               51  DD 00013             PUSHL   R1                                        ; 0557
       00000000G 00            01  FB 00015             CALLS   #1, SYS$PUT                               ;
                 03            50  E9 0001C             BLBC    PUT_STATUS, 1$                            ; 0559
                 50            01  D0 0001F             MOVL    #1, R0                                    ; 0561
                                   04 00022 1$:         RET                                               ; 0562

; Routine Size:  35 bytes,    Routine Base:  $CODE$ + 07B8
```

```
;  569          0563  1 %SBTTL 'HEX_TEXT - Return a binary string in hexadecimal'
;  570          0564  1 ROUTINE HEX_TEXT (                                    ! Return a binary string in hex
;  571          0565  1         OUTPUT_DESC,                                  ! Descriptor to receive the hex
;  572          0566  1         INPUT_LEN,                                    ! Number of input bytes
;  573          0567  1         INPUT_ADDR                                    ! Address of start of input
;  574          0568  1     ) =
;  575          0569  1
;  576          0570  1 !++
;  577          0571  1 ! FUNCTIONAL DESCRIPTION:
;  578          0572  1 !
;  579          0573  1 !       This routine converts an arbitrary string of bytes into hex, so it
;  580          0574  1 !       can be printed.  Early bytes are put to the right of later bytes.
;  581          0575  1 !
;  582          0576  1 ! CALLING SEQUENCE:
;  583          0577  1 !
;  584          0578  1 !       status.wlc.v = HEX_TEXT (OUTPUT_desc.wt.dx, INPUT_LEN.rl.v, INPUT_ADDR,ra.v)
;  585          0579  1 !
;  586          0580  1 ! FORMAL PARAMETERS:
;  587          0581  1 !
;  588          0582  1 !       output_desc     Where the result text is stored.
;  589          0583  1 !       input_len       Number of bytes of input
;  590          0584  1 !       input_addr      Address of first input byte
;  591          0585  1 !
;  592          0586  1 ! IMPLICIT INPUTS:
;  593          0587  1 !
;  594          0588  1 !       NONE
;  595          0589  1 !
;  596          0590  1 ! IMPLICIT OUTPUTS:
;  597          0591  1 !
;  598          0592  1 !       NONE
;  599          0593  1 !
;  600          0594  1 ! COMPLETION STATUS:
;  601          0595  1 !
;  602          0596  1 !       SS$_NORMAL      Normal successful completion
;  603          0597  1 !       Any errors from STR$CONCAT
;  604          0598  1 !       Any errors from STR$COPY_DX
;  605          0599  1 !
;  606          0600  1 ! SIDE EFFECTS:
;  607          0601  1 !
;  608          0602  1 !       Calls STR$CONCAT and STR$COPY_DX, thus manipulating string storage.
;  609          0603  1 !
;  610          0604  1 !--
;  611          0605  1
;  612          0606  2     BEGIN
;  613          0607  2
;  614          0608  2     MAP
;  615          0609  2         INPUT_ADDR : REF VECTOR [, BYTE],
;  616          0610  2         OUTPUT_DESC : REF BLOCK [8, BYTE];
;  617          0611  2
;  618          0612  2     LOCAL
;  619          0613  2         INTER_DESC : BLOCK [8, BYTE],
;  620          0614  2         DIGIT_DESC : BLOCK [8, BYTE],
;  621          0615  2         DIGIT,
;  622          0616  2         STATUS;
;  623          0617  2
;  624          0618  2     INIT_DESCRIPTOR (INTER_DESC);
;  625          0619  2     DIGIT_DESC [DSC$W_LENGTH] = 1;
```

```
;  626          0620  2     DIGIT_DESC [DSC$B_DTYPE] = DSC$K_DTYPE_T;
;  627          0621  2     DIGIT_DESC [DSC$B_CLASS] = DSC$K_CLASS_S;
;  628          0622  2     DIGIT_DESC [DSC$A_POINTER] = DIGIT;
;  629          0623  2
;  630          0624  2     INCR CHAR_NO FROM 1 TO .INPUT_LEN DO
;  631          0625  2         BEGIN
;  632          0626  2
;  633          0627  2         LOCAL
;  634          0628  2             CHAR;
;  635          0629  2
;  636          0630  2         CHAR = .INPUT_ADDR [.CHAR_NO - 1];
;  637          0631  2         DIGIT = (.CHAR AND 15) + '0';
;  638          0632  2
;  639          0633  2         IF (.DIGIT GTR '9') THEN DIGIT = .DIGIT - 10 - '0' + 'A';
;  640          0634  2
;  641          0635  2         STATUS = STR$CONCAT (INTER_DESC, DIGIT_DESC, INTER_DESC);
;  642          0636  2
;  643          0637  2         IF ( NOT .STATUS) THEN RETURN (.STATUS);
;  644          0638  2
;  645          0639  2         DIGIT = (.CHAR^-4) + '0';
;  646          0640  2
;  647          0641  2         IF (.DIGIT GTR '9') THEN DIGIT = .DIGIT - 10 - '0' + 'A';
;  648          0642  2
;  649          0643  2         STATUS = STR$CONCAT (INTER_DESC, DIGIT_DESC, INTER_DESC);
;  650          0644  2
;  651          0645  2         IF ( NOT .STATUS) THEN RETURN (.STATUS);
;  652          0646  2
;  653          0647  2         END;
;  654          0648  2
;  655          0649  2     STATUS = STR$COPY_DX (.OUTPUT_DESC, INTER_DESC);
;  656          0650  2     DISCARD_DESCRIPTOR (INTER_DESC);
;  657          0651  2     RETURN (.STATUS);
;  658          0652  1     END;                                    ! End of routine HEX_TEXT


                                    003C 00000 HEX_TEXT:
                                                .WORD   Save R2,R3,R4,R5                        ;  0564
                          55 00000000G   00 9E 00002            MOVAB   STR$CONCAT, R5
                             5E          14 C2 00009            SUBL2   #20, SP
                       0C    AE 020E0000 8F D0 0000C            MOVL    #34471936, INTER_DESC       ;  0618
                                   10    AE D4 00014            CLRL    INTER_DESC+4
                       04    AE 010E0001 8F D0 00017            MOVL    #17694721, DIGIT_DESC       ;  0619
                       08    AE          6E 9E 0001F            MOVAB   DIGIT, DIGIT_DESC+4         ;  0622
                                         53 D4 00023            CLRL    CHAR_NO                     ;  0630
                                         4E 11 00025            BRB     4$
                 50                53    0C AC C1 00027 1$:      ADDL3   INPUT_ADDR, CHAR_NO, R0
                                   52    FF A0 9A 0002C          MOVZBL  -1(R0), CHAR
              6E                 52    04    00 EF 00030       EXTZV   #0, #4, CHAR, DIGIT         ;  0631
                                         6E    30 C0 00035     ADDL2   #48, DIGIT
                                         39    6E D1 00038     CMPL    DIGIT, #57                  ;  0633
                                               03 15 0003B     BLEQ    2$
                                         6E    07 C0 0003D     ADDL2   #7, DIGIT
                                               0C AE 9F 00040 2$:      PUSHAB  INTER_DESC          ;  0635
                                               08 AE 9F 00043          PUSHAB  DIGIT_DESC
```

```
                                 14   AE  9F 00046          PUSHAB  INTER_DESC                                    ;
                              65 03   FB 00049          CALLS   #3, STR$CONCAT                                ;
                              54 50   D0 0004C          MOVL    R0, STATUS                                    ;
                              4E 54   E9 0004F          BLBC    STATUS, 5$                                    ; 0637
                      52      52 FC   8F 78 00052       ASHL    #-4, CHAR, R2                                 ; 0639
                              6E 30   A2 9E 00057       MOVAB   48(R2), DIGIT                                 ;
                              39 6E   D1 0005B          CMPL    DIGIT, #57                                    ; 0641
                                 03   15 0005E          BLEQ    3$                                            ;
                              6E 07   C0 00060          ADDL2   #7, DIGIT                                     ;
                                 0C   AE 9F 00063 3$:   PUSHAB  INTER_DESC                                    ; 0643
                                 08   AE 9F 00066       PUSHAB  DIGIT_DESC                                    ;
                                 14   AE 9F 00069       PUSHAB  INTER_DESC                                    ;
                              65 03   FB 0006C          CALLS   #3, STR$CONCAT                                ;
                              54 50   D0 0006F          MOVL    R0, STATUS                                    ;
                              2B 54   E9 00072          BLBC    STATUS, 5$                                    ; 0645
                      AD      53 08   AC F3 00075 4$:   AOBLEQ  INPUT_LEN, CHAR_NO, 1$                        ; 0624
                                 0C   AE 9F 0007A       PUSHAB  INTER_DESC                                    ; 0649
                                 04   AC DD 0007D       PUSHL   OUTPUT_DESC                                   ;
                00000000G     00 02   FB 00080          CALLS   #2, STR$COPY_DX                               ;
                              54 50   D0 00087          MOVL    R0, STATUS                                    ;
                                 0C   AE 9F 0008A       PUSHAB  INTER_DESC                                    ; 0650
                00000000G     00 01   FB 0008D          CALLS   #1, STR$FREE1_DX                              ;
                              09 50   E8 00094          BLBS    FREE_STATUS, 5$                               ;
                                 50   DD 00097          PUSHL   FREE_STATUS                                   ;
                00000000G     00 01   FB 00099          CALLS   #1, @IB$STOP                                  ;
                              50 54   D0 000A0 5$:      MOVL    STATUS, R0                                    ; 0651
                                 04   000A3             RET                                                   ; 0652

; Routine Size:  164 bytes,    Routine Base:  $CODE$ + 07DB
```

```
;  660          0653  1 %SBTTL 'PRINTABLE_TEXT - Return a binary string in ASCII, printable'
;  661          0654  1 ROUTINE PRINTABLE_TEXT (                          ! Return a binary string in printable ASCII
;  662          0655  1         OUTPUT_DESC,                             ! Descriptor to receive the text
;  663          0656  1         INPUT_LEN,                               ! Number of input bytes
;  664          0657  1         INPUT_ADDR                               ! Address of start of input
;  665          0658  1     ) =
;  666          0659  1
;  667          0660  1 !++
;  668          0661  1 ! FUNCTIONAL DESCRIPTION:
;  669          0662  1 !
;  670          0663  1 !       This routine converts an arbitrary string of bytes into ASCII, representing
;  671          0664  1 !       unprintable characters in hexadecimal so the result can be printed.
;  672          0665  1 !
;  673          0666  1 ! CALLING SEQUENCE:
;  674          0667  1 !
;  675          0668  1 !       status.wlc.v = PRINTABLE_TEXT (OUTPUT_desc.wt.dx, INPUT_LEN.rl.v, INPUT_ADDR,ra.v)
;  676          0669  1 !
;  677          0670  1 ! FORMAL PARAMETERS:
;  678          0671  1 !
;  679          0672  1 !       OUTPUT_DESC     Where the result text is stored.
;  680          0673  1 !       INPUT_LEN       Number of bytes of input
;  681          0674  1 !       INPUT_ADDR      Address of first input byte
;  682          0675  1 !
;  683          0676  1 ! IMPLICIT INPUTS:
;  684          0677  1 !
;  685          0678  1 !       NONE
;  686          0679  1 !
;  687          0680  1 ! IMPLICIT OUTPUTS:
;  688          0681  1 !
;  689          0682  1 !       NONE
;  690          0683  1 !
;  691          0684  1 ! COMPLETION STATUS:
;  692          0685  1 !
;  693          0686  1 !       SS$_NORMAL      Normal successful completion
;  694          0687  1 !       Any errors from STR$CONCAT
;  695          0688  1 !       Any errors from STR$COPY_DX
;  696          0689  1 !
;  697          0690  1 ! SIDE EFFECTS:
;  698          0691  1 !
;  699          0692  1 !       Calls STR$CONCAT and STR$COPY_DX, thus manipulating string storage.
;  700          0693  1 !
;  701          0694  1 !--
;  702          0695  1
;  703          0696  2     BEGIN
;  704          0697  2
;  705          0698  2     MAP
;  706          0699  2         INPUT_ADDR : REF VECTOR [, BYTE],
;  707          0700  2         OUTPUT_DESC : REF BLOCK [8, BYTE];
;  708          0701  2
;  709          0702  2     LOCAL
;  710          0703  2         INTER_DESC : BLOCK [8, BYTE],
;  711          0704  2         CHAR_DESC : BLOCK [8, BYTE],
;  712          0705  2         CHAR_REP : VECTOR [4, BYTE],
;  713          0706  2         STATUS;
;  714          0707  2
;  715          0708  2     INIT_DESCRIPTOR (INTER_DESC);
;  716          0709  2     CHAR_DESC [DSC$W_LENGTH] = 1;
```

```
;  717          0710  2     CHAR_DESC [DSC$B_DTYPE] = DSC$K_DTYPE_T
;  718          0711  2     CHAR_DESC [DSC$B_CLASS] = DSC$K_CLASS_S
;  719          0712  2     CHAR_DESC [DSC$A_POINTER] = CHAR_REP [0];
;  720          0713  2
;  721          0714  2     INCR CHAR_NO FROM 1 TO .INPUT_LEN DO
;  722          0715  3         BEGIN
;  723          0716  3
;  724          0717  3         LOCAL
;  725          0718  3             CHAR;
;  726          0719  3
;  727          0720  3         CHAR = .INPUT_ADDR [.CHAR_NO - 1];
;  728          0721  3
;  729          0722  4         IF ((.CHAR GEQ %X'20') AND                  !
;  730          0723  4             (.CHAR LSS %X'7F') AND                  !
;  731          0724  4             (.CHAR NEQ '<') AND                     !
;  732          0725  4             (.CHAR NEQ '"'))
;  733          0726  3         THEN
;  734          0727  4             BEGIN
;  735          0728  4     !+
;  736          0729  4     ! Show character as itself.
;  737          0730  4     !-
;  738          0731  4             CHAR_REP [0] = .CHAR;
;  739          0732  4             CHAR_DESC [DSC$W_LENGTH] = 1;
;  740          0733  4             END
;  741          0734  3         ELSE
;  742          0735  4             BEGIN
;  743          0736  4     !+
;  744          0737  4     ! The character is not printable.  Represent it by <>.  To avoid
;  745          0738  4     ! ambiguity, "<" and '"' are also represented this way.  Control characters
;  746          0739  4     ! SOH through SUB are represented by <^letter>; others characters by <hex>.
;  747          0740  4     !-
;  748          0741  4             CHAR_REP [0] = '<';
;  749          0742  4
;  750          0743  5             IF (((.CHAR + %X'40') GEQ 'A') AND ((.CHAR + %X'40') LEQ 'Z'))
;  751          0744  4             THEN
;  752          0745  5                 BEGIN
;  753          0746  5                 CHAR_REP [1] = '^';
;  754          0747  5                 CHAR_REP [2] = .CHAR + %X'40';
;  755          0748  5                 END
;  756          0749  4             ELSE
;  757          0750  5                 BEGIN
;  758          0751  5
;  759          0752  5                 LOCAL
;  760          0753  5                     DIGIT;
;  761          0754  5
;  762          0755  5                 DIGIT = (.CHAR^-4) + '0';
;  763          0756  5
;  764          0757  5                 IF (.DIGIT GTR '9') THEN DIGIT = .DIGIT - 10 - '0' + 'A';
;  765          0758  5
;  766          0759  5                 CHAR_REP [1] = .DIGIT;
;  767          0760  5                 DIGIT = (.CHAR AND 15) + '0';
;  768          0761  5
;  769          0762  5                 IF (.DIGIT GTR '9') THEN DIGIT = .DIGIT - 10 - '0' + 'A';
;  770          0763  5
;  771          0764  5                 CHAR_REP [2] = .DIGIT;
;  772          0765  4                 END;
;  773          0766  4
```

```
;  774          0767  4              CHAR_REP [3] = '>';
;  775          0768  4              CHAR_DESC [DSC$W_LENGTH] = 4;
;  776          0769  3              END;
;  777          0770  3
;  778          0771  3          STATUS = STR$CONCAT (INTER_DESC, INTER_DESC, CHAR_DESC);
;  779          0772  3
;  780          0773  3          IF ( NOT .STATUS) THEN RETURN (.STATUS);
;  781          0774  3
;  782          0775  2          END;
;  783          0776  2
;  784          0777  2      STATUS = STR$COPY_DX (.OUTPUT_DESC, INTER_DESC);
;  785          0778  2      DISCARD_DESCRIPTOR (INTER_DESC);
;  786          0779  2      RETURN (.STATUS);
;  787          0780  1      END;                                    ! End of routine PRINTABLE_TEXT


                                    000C 00000 PRINTABLE_TEXT:
                                                        .WORD   Save R2,R3                              ; 0654
                                5E                  14  C2 00002         SUBL2   #20, SP                         ;
                             0C AE 020E0000         8F  D0 00005         MOVL    #34471936, INTER_DESC          ; 0708
                                          10        AE  D4 0000D         CLRL    INTER_DESC+4                    ;
                             04 AE 010E0001         8F  D0 00010         MOVL    #17694721, CHAR_DESC           ; 0709
                             08 AE                  6E  9E 00018         MOVAB   CHAR_REP, CHAR_DESC+4          ; 0712
                                                    52  D4 0001C         CLRL    CHAR_NO                        ; 0720
                                                0090  31 0001E         BRW     7$                              ;
                   50           52          0C   AC  C1 00021 1$:      ADDL3   INPUT_ADDR, CHAR_NO, R0         ;
                                51          FF   A0  9A 00026         MOVZBL  -1(R0), CHAR                    ;
                                20              51  D1 0002A         CMPL    CHAR, #32                      ; 0722
                                                1C  19 0002D         BLSS    2$                              ;
                     0000007F   8F              51  D1 0002F         CMPL    CHAR, #127                     ; 0723
                                                13  18 00036         BGEQ    2$                              ;
                                3C              51  D1 00038         CMPL    CHAR, #60                      ; 0724
                                                0E  13 0003B         BEQL    2$                              ;
                                22              51  D1 0003D         CMPL    CHAR, #34                      ; 0725
                                                09  13 00040         BEQL    2$                              ;
                                6E              51  90 00042         MOVB    CHAR, CHAR_REP                 ; 0731
                          04    AE              01  B0 00045         MOVW    #1, CHAR_DESC                  ; 0732
                                                50  11 00049         BRB     6$                             ; 0722
                                6E              3C  90 0004B 2$:      MOVB    #60, CHAR_REP                  ; 0741
                                50          40  A1  9E 0004E         MOVAB   64(R1), R0                     ; 0743
                     00000041   8F              50  D1 00052         CMPL    R0, #65                         ;
                                                10  19 00059         BLSS    3$                              ;
                     0000005A   8F              50  D1 0005B         CMPL    R0, #90                         ;
                                                07  14 00062         BGTR    3$                              ;
                          01    AE          5E   8F  90 00064         MOVB    #94, CHAR_REP+1                ; 0746
                                                24  11 00069         BRB     5$                             ; 0747
                   50           51          FC   8F  78 0006B 3$:      ASHL    #-4, CHAR, R0                  ; 0755
                                50                  30  C0 00070      ADDL2   #48, DIGIT                      ;
                                39                  50  D1 00073      CMPL    DIGIT, #57                     ; 0757
                                                    03  15 00076      BLEQ    4$                              ;
                                50                  07  C0 00078      ADDL2   #7, DIGIT                       ;
                          01    AE                  50  90 0007B 4$:   MOVB    DIGIT, CHAR_REP+1              ; 0759
         50       51                 04              00  EF 0007F      EXTZV   #0, #4, CHAR, DIGIT            ; 0760
                                50                  30  C0 00084      ADDL2   #48, DIGIT                      ;
```

```
                                39              50  D1 00087          CMPL    DIGIT, #57                          ; 0762
                                                03  15 0008A          BLEQ    5$
                                50              07  C0 0008C          ADDL2   #7, DIGIT
                            02  AE              50  90 0008F  5$:     MOVB    DIGIT, CHAR_REP+2                   ; 0764
                            03  AE              3E  90 00093          MOVB    #62, CHAR_REP+3                     ; 0767
                            04  AE              04  B0 00097          MOVW    #4, CHAR_DESC                       ; 0768
                                            04  AE  9F 0009B  6$:     PUSHAB  CHAR_DESC                           ; 0771
                                            10  AE  9F 0009E          PUSHAB  INTER_DESC
                                            14  AE  9F 000A1          PUSHAB  INTER_DESC
                                00000000G   00      03  FB 000A4      CALLS   #3, STR$CONCAT
                                            53      50  D0 000AB      MOVL    R0, STATUS
                                            2D      53  E9 000AE      BLBC    STATUS, 8$                          ; 0773
                    FF69        52          01      08  AC  F1 000B1  7$:     ACBL    INPUT_LEN, #1, CHAR_NO, 1$  ; 0714
                                            0C  AE  9F 000B8          PUSHAB  INTER_DESC                          ; 0777
                                            04  AC  DD 000BB          PUSHL   OUTPUT_DESC
                                00000000G   00      02  FB 000BE      CALLS   #2, STR$COPY_DX
                                            53      50  D0 000C5      MOVL    R0, STATUS
                                            0C  AE  9F 000C8          PUSHAB  INTER_DESC                          ; 0778
                                00000000G   00      01  FB 000CB      CALLS   #1, STR$FREE1_DX
                                            09      50  E8 000D2      BLBS    FREE_STATUS, 8$
                                                    50  DD 000D5      PUSHL   FREE_STATUS
                                00000000G   00      01  FB 000D7      CALLS   #1, LIB$STOP
                                            50      53  D0 000DE  8$:     MOVL    STATUS, R0                      ; 0779
                                                        04 000E1          RET                                     ; 0780

; Routine Size:  226 bytes,    Routine Base:  $CODE$ + 087F

;  788          0781  1 !<BLF/PAGE>
```

```
;  790          0782  1 END                                          ! End of module
;  791          0783  1
;  792          0784  0 ELUDOM



                                                                    .EXTRN  LIB$STOP

;                                  PSECT SUMMARY
;
;       Name                    Bytes                           Attributes
;
;  $PLIT$                         1020  NOVEC,NOWRT,  RD ,NOEXE,NOSHR,  LCL,  REL,  CON,NOPIC,ALIGN(2)
;  $CODE$                         2401  NOVEC,NOWRT,  RD ,  EXE,NOSHR,  LCL,  REL,  CON,NOPIC,ALIGN(2)


;                                Library Statistics
;                                        --------- Symbols -------      Pages       Processing
;       File                             Total    Loaded   Percent      Mapped      Time
;
;  _$255$DUA28:[SYSLIB]STARLET.L32;1       9776       106         1         581        00:01.0
```



```
;                                  COMMAND QUALIFIERS

;       BLISS/CHECK=(FIELD,INITIAL,OPTIMIZE)/NOTRACE/LIS=LIS$:BASMSGGEN/OBJ=OBJ$:BASMSGGEN MSRC$:BASMSGGEN/UPDATE=(ENH$:BASMSGGEN
;       )

; Size:         2401 code + 1020 data bytes
; Run Time:       00:54.8
; Elapsed Time:   01:50.6
; Lines/CPU Min:    858
; Lexemes/CPU-Min: 21680
; Memory Used:  601 pages
; Compilation Complete
```

BASMID
LIS

BASMULDDT
LIS

BASNOTIMP
LIS

BASMOVEAR
LIS

BASMSGDEF
LIS

BASMSGGEN
LIS

BASONECHR
LIS

BASMOVE
LIS

BASNUM
LIS

BASNAMEAS
LIS

BASNUM
LIS